DOCUMENT USE REFRESHER FOR APPRENTICES: OVERVIEW

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

nscc

Human Resources and
Skills Development Canada

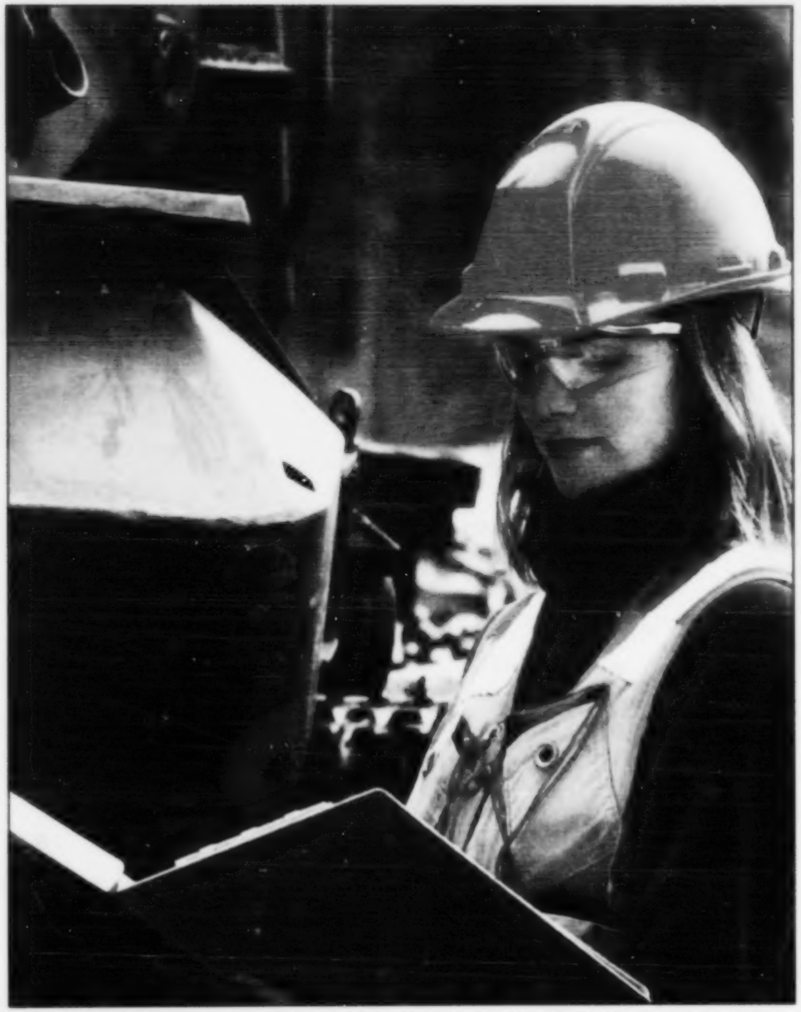
Ressources humaines et
Développement des compétences Canada

ABOUT THE APPRENTICESHIP ESSENTIAL SKILLS INITIATIVE...

The Nova Scotia Department of Education, Human Resources Skill Development Canada, Nova Scotia Community College and The National Literacy Secretariat have partnered to establish the Nova Scotia Apprenticeship Essential Skills Initiative. This initiative incorporates an informal assessment with the apprenticeship registration process. The assessment determines whether or not an apprentice needs support in acquiring the skills necessary to be successful in the apprenticeship training. If so, a learning plan is developed. The learning plan uses trades-specific material to map a pathway for every apprentice to achieve success in certification in his or her chosen trade.

Essential Skills include – reading text, document use, numeracy, writing, oral communications, working with others, critical thinking, basic computer use, continuous learning.

The Document Use Refresher is a major component of the Learning Plan Process for apprenticeship clients who need to improve or refresh their document use skills.



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GLOSSARY

Abstract	Not concrete, a theoretical representation of the real thing.
Alphabetical Index	A reference table organized alphabetically to facilitate the location of information within a book.
Apprentice	A person who is registered in a recognized trade and works under the guidance of a certified journeyperson for a specified time to learn the technical and hands-on skills required to challenge trade certification exams.
Assembly Drawing	Exploded drawing of component pieces to illustrate how they fit together
Assessment	A means of determining the comprehension level without formal testing.
Axis, axes	One of the two sides of a graph. The two axes are often referred to as the x axis (horizontal axis) and the y axis (vertical axis).
Combined Lists	Combination of two or more related simple lists
Complexity	The difficulty associated with dealing with more than one piece of information.
Criteria	The standard or rule by which judgments are made.
Enhancement	To build on or add to the effect.
Essential Skills	Skills required for carrying out daily personal and work related activities.
Flow Chart	A representation of written procedure in a series of steps and decision points.
Grid	Underlying structure of intersecting data used in line and bar graphs. (Actual lines of the grid may not be displayed)
Icon	Pictures or symbols that are instantly recognized with a product, action or place
Illustration	A pictorial representation accompanying a printed description.
Image	A representation of a person or object.
Index	A reference table designed to facilitate the location of information within a book.
Intersecting Lists	List in which the required information is found at the intersection of two search lists.

Legend	Provides additional information that explains how detailed information is displayed.
Matrix	A display of information in rows or columns.
Mimetic	A picture or symbol used to represent or mimic the real object.
Nested List	When all information is the same except for one variable, that item is subdivided or nested within the list.
Pictorial	To represent something using pictures.
Primary Source	Information areas on entry forms that rely on a person's knowledge or memory to complete.
Schematic	Plans or drawings that demonstrate how something functions without relying on physical references.
Secondary Source	Information areas on entry forms that require a person to obtain information from another source to complete.
Subject Index	A reference table organized by subject to facilitate the location of information within a book.
Template	A completed sample for comparison purposes.
Trades	A group of occupations recognized by National and Provincial Governments
Troubleshooting	A system to find and eliminate trouble.

WHY DOCUMENT USE REFRESHER?

Before talking about why, the term "Document Literacy" should be clarified. It is described as the skills and knowledge necessary to locate and use information contained in a variety of document formats such as: lists, drawings, maps, entry forms troubleshooting charts and service manuals. Document Use in the workplace is unlike reading and writing taught in schools and training institutions and is often carried out at a complexity level higher than the reading and writing skills taught in school.

Research has demonstrated the importance of essential skills in completing job tasks and as a critical factor in the completion of an apprenticeship program. Research has also shown that document use is required in all workplaces and is an essential requirement among trades. Understanding document structure and the foundational components that make up all documents have been identified as obstacles both in the workplace and during technical training for apprentices.

Jobsite reading, unlike in schools, is reading required to carry out a specific task without an emphasis on remembering what had been read. Understanding document organization and how text is sectioned and displayed is critical for effective information searches and efficient use of documents. Understanding the use of search and access aids such as: indexes, table of contents and glossaries is an essential skill within trades, but a skill that has not been addressed to date in our school systems. Most of the learning in school is prose type documents (books or novels) where the learner reads to remember continuous text. There is little in common between the type of reading done in school and what is required on the jobsite. Very little work has been done to teach the skills necessary for workers to read and comprehend the documents they must deal with on a daily basis. Document use skills have also been identified as a component in all other essential skills including math. Essential document use skills include reading reports, charts, diagrams, maps, drawings, process charts, and manuals, as well as completing inspection reports or order forms.

Better document use skills can increase productivity by decreasing time for problem solving and decreasing errors on the job. Trades are skilled based, and with reliance on computer aided tasks as well as strict government regulations for safety, document use skills will continue to grow in importance. Document Use skills are needed for completing apprenticeship; but more importantly, good basic document use skills are something employers are looking for when they hire. Understanding documents, whether on paper or on computer, requires a good knowledge of document organization. All trades are becoming more technical in nature. Today's employee must be able to read and interpret information from many sources, and use this information to operate equipment, problem solve or ensure that personal safety is not compromised. Understanding the vast changes in technology, especially with regard to document use means apprentices must have stronger foundational document use skills in order to adapt. Computers have made the access and storing of information much easier and have allowed information to be displayed in a variety of formats. Workers must be able to navigate databases to find information efficiently to compete in a global economy.

Regardless which trade is selected, we can quickly see how each has changed to a point where new apprentices are required to deal with a variety documents from the time they enter the workplace, such as MSDS Sheets, Inspection Reports, Time Sheets, etc. We can no longer assume that only senior tradespeople or management will carry out the majority of document use tasks.

This refresher has been designed to address the gap in Document Use skills and to provide a systematic approach to teaching document literacy. The refresher has been written for the workplace instructor, mentor or tutor, with or without a trade's background. This Document Use Refresher has been developed to meet the needs of learners from all major trade groups in a number of delivery modes, from classroom based with combined trades to tutor or mentor based delivery.

Improved Document Use Skills will help tradespeople by:

- Enabling learners to find the information they need within documents more efficiently.
- Helping apprentices be more confident at the worksite.
- Completing tasks more efficiently and with greater accuracy.
- Removing the fear associated with reading trades documents.
- Providing foundational skills that can be used in all other trades training.

TEACHING SUGGESTIONS

Tradespeople Teaching the Document Use Refresher Program Should:

- Encourage apprentices to learn from each other.
- Be open to learning something new everyday.
- Ask questions rather than give answers.
- Encourage learner participation and open dialogue.
- Have and use resources and suggest materials.
- Find answers to learners questions.
- Use suggested activities to ensure learning has taken place.
- Remember learners may be new to the trade and therefore trade terms must be explained.
- Realize that you don't have to be a Document Use expert to teach this program. The program is designed to provide teaching strategies in conjunction with your trade knowledge.

Workplace Instructors Teaching the Document Use Refresher Program should:

- Use material and props that are trade related.
- Use common trade terms whenever possible.
- Explain why the learner may need to know this skill.
- Realize that knowledge and understanding of the trade will be appreciated by the learners.
- Research tricks of the trade to gain credibility.
- Be mindful that the academic background of the apprentices could vary greatly.

Strategies for Instruction

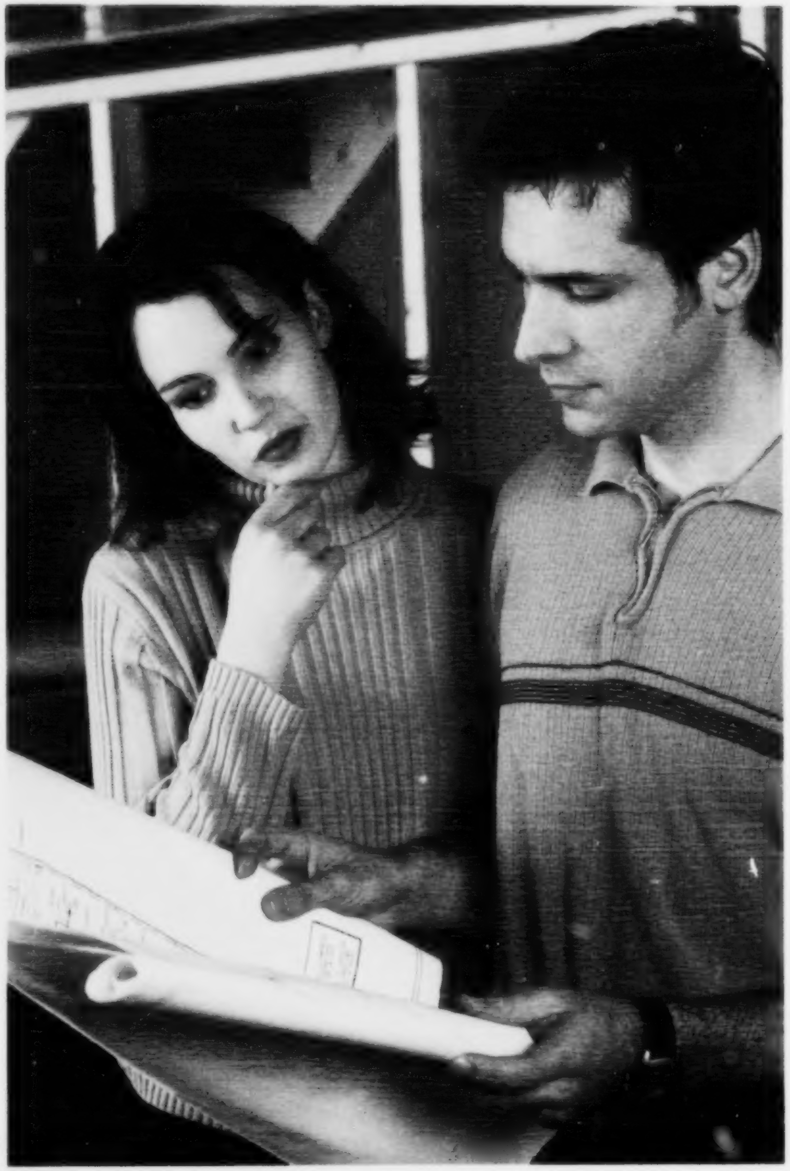
Taking the time to create a friendly environment will be time well spent. Help learners to feel comfortable with their skill level and encourage them to talk about how they feel about learning document use skills. This topic will be hard initially for the learner to grasp. They will often self identify as having a problem, but taking the time to explain about documents and their structure and how they apply to their trade will help to answer questions they will have about this refresher. The learners work environment is changing rapidly; computers, reports and LED displays are integral parts of today's worksite. The reality for many is that learning the job means figuring out these new tasks at a rapid pace in a changing work environment. The need for people to come to a job work-ready increases the need for training in essential skills. Assumptions about worker competence in using schedules, catalogues, manuals, schematics, maps or production charts and other job related documents were just that, assumptions.

Let the learners know that this refresher is aimed at deliberately addressing an area that until now has not been addressed. Document Use skills are essential to their success so time will be spent looking at the structure and the foundational items that are present in all documents. Let them know that understanding document strategies will make all other trade learning easier.

Introduce yourself and describe how documents affect you as an instructor. Remember the earlier you can show an example of an every day document that everyone can relate to the sooner the learner can identify with you. A good example of simple documents is icons or pictures. There are many examples as you enter your building: crosswalk signs, no smoking, stops signs, no parking, etc. Any of these are good icebreakers and help to introduce the first module of the refresher. Let the learner know that no matter how complex a document becomes they all start with the same foundational pieces. The same stop or yield sign you start with in module 1 will be used in later modules as part of schematics or sequence charts. This refresher will break down documents into their simplest form and build them module by module so that diagrams, maps, flow charts, sequence charts and manuals are easier to read and understand.

Allow the learners to talk freely and let them give examples of documents that give them problems so that they can see that their comfort level or fears are common. This will be the first opportunity for the learners to open up in class and they might need some prompting to get started. Some good examples are: MSDS Sheets, installation instructions, inspection reports or your union collective agreement.

You might want to list some of the documents on a flipchart to review at the end of the refresher. It will also be an opportunity for the learners to realize that the same types of documents are used at all workplaces.



PRINCIPLES OF APPRENTICESHIP

Use a Modeling Approach

Apprenticeship approach to learning includes understanding who the learners are and how to customize learning plans for their trade. The language must be appropriate to the learner: you must use as many trades terms as possible. Most of all, the learner must know that you respect them and their trade. You don't have to be a subject expert but a little knowledge and understanding will be appreciated.

As instructors of a Document Use Refresher you must ask yourself, "Do the learners need to know this and what is its application?"

Principles of Apprenticeship	**Documents Use Refresher Features**	**Description**
Respect Learners	Introduce document use topics by opening discussions. Talk about topics in a relaxed atmosphere. Ask open questions to discover what learners already know.	Introduction Ask Learners
Demonstration	Instructor models the skill to be learned through demonstration and discussions. Commentary should include tricks of the trade, helpful hints, shortcuts and trade relevancy.	Demonstrate Flipchart Handout
Active Learning with Learner Commentary and Journaling	Learners try the skill in small groups to facilitate learning amongst all participants in non-competitive environment. Encourage learners to self-correct and be independent.	Discovery activities
Applying the Skill	Skills are applied to the trade or some real life application. As much as possible, ensure the document examples are real to the learners. Teach problem solving as a component of every unit. Learners are encouraged to go solo while providing encouragement and support.	Trade specific documents to complete in each section. Evaluation following each section
Discussing the Skill	Instructors and learners discuss the learning to solidify the concepts. It is an essential phase for learners to understand the foundational concepts and how they apply to all documents	Review of each module at the beginning of the next module

TRADE GROUPS

Each module contains trade specific supporting documents based on trade groupings. The trade groupings are as follows:

Motor Vehicle Trades
- Automotive Service Technician
- Service Station Mechanic
- Appliance Service Technician
- Automotive Painter
- Recreation Vehicle Service Technician
- Partsperson
- Motor Vehicle Body Repairer (Metal and Paint)
- Motorcycle Mechanic

Cooking Trades
- Cook
- Baker

Heavy Equipment Mechanical Trades
- Truck and Transport Mechanic
- Truck-Trailer Repairer
- Heavy Duty Equipment Technician
- Farm Equipment Mechanic

Painter Decorator Trades
- Painter and Decorator

Pipe Trades
- Plumber
- Sprinkler System Installer
- Steamfitter-Pipefitter
- Gas Fitter

Mechanical Trades
- Industrial Instrument Mechanic
- Industrial Mechanic Millwright
- Machinist
- Mine Mechanic
- Tool and Die Maker

Building Trades
- Bricklayer
- Cabinet Maker
- Carpenter
- Concrete Finisher
- Floorcovering Installer
- Glazier
- Insulator (Heat and Frost)
- Lather (Interior Systems Mechanic)
- Locksmith
- Restoration Stone Mason
- Roofer
- Tilesetter

Metal Fabrication Trades
- Ironworker (Generalist)
- Metal Fabricator
- Marine Fitter
- Sheet Metal Worker
- Welder

Heating/Cooling Trades

- Boilermaker
- Power Engineer
- Oil Burner Mechanic
- Refrigeration and Air Conditioning Mechanic

Electrical Trades
- Electric Motor System Technician
- Electronics Technician/Consumer Products
- Construction Electrician
- Industrial Electrician
- Mine Electrician
- Powerline Technician

DOCUMENT USE REFRESHER DESIGN

This Instructional Guide is designed with two types of instructors in mind: the tradesperson new to teaching document use skills and instructor/mentor new to teaching tradespeople. Some learners in the Document Use Refresher will have been away from formal learning for a number of years and will need to refresh their document use skills. Other learners will have graduated recently but didn't perform well in school and still require the skills or confidence in document use. The teaching strategies for these learners often need to be non-traditional. They consider themselves to be "hands-on" learners who will need real life examples of documents that they can identify with from their workplace or personal lives. This refresher targets newer apprentices, but is suitable for any tradesperson whose document literacy skills are in need of improvement.

Tradespeople new to instructing Document Use Skills

These instructors are experienced in a trade. They understand and connect with trades' learners, and have first hand knowledge of why document use is important to the trades and which document use topics are most appropriate for specific trades. Learners tend to show immediate respect to this type of instructor because they have already completed an apprenticeship and can speak from experience. The Document Use Refresher is designed to provide the tradesperson with teaching strategies, sample documents and evaluation processes to meet the learner's needs.

Workplace Instructors New to Teaching Tradespeople

These instructors can provide a range of teaching strategies to learners and adapt quickly to class dynamics. The Document Use Refresher is designed to provide trades related examples and activities that will assist in bridging the trades experience gap. The glossary provided will assist the instructor to understand some trade specific terms

DOCUMENT USE REFRESHER LAYOUT

The Document Use Refresher is designed so that each section can be taught independently or as a complete program. Document use requires knowledge of certain foundational components in order to grasp more difficult documents. The flow chart on this page is a guide showing modules that should be reviewed prior to studying more difficult sections.

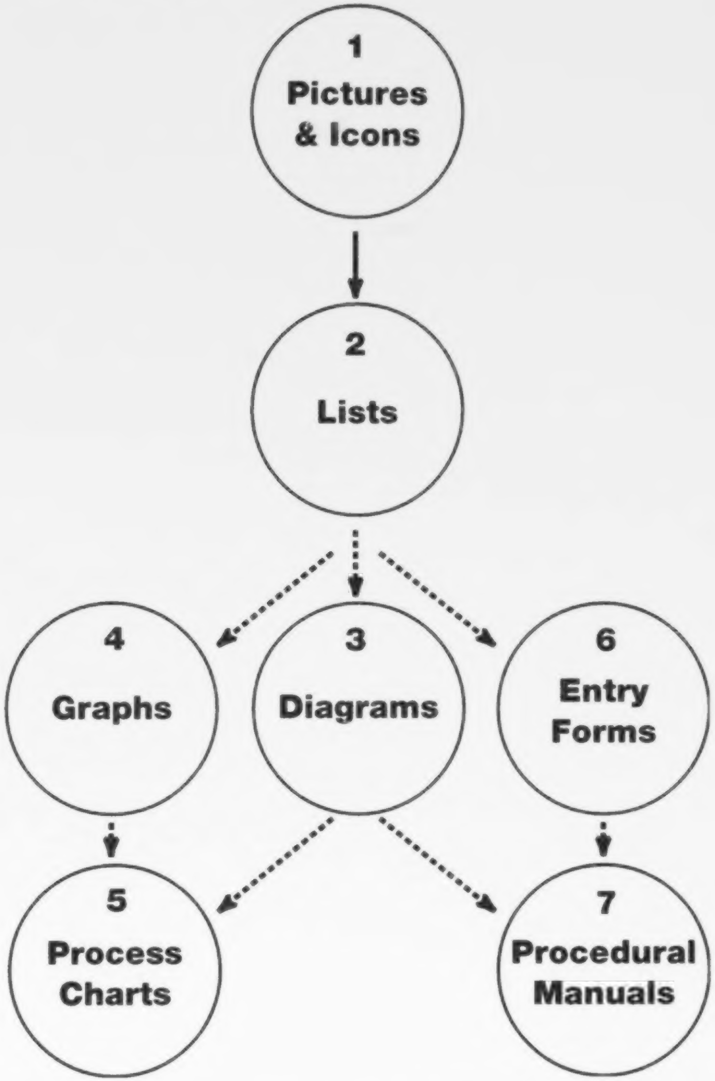
Each module is designed to build foundational document use skills. The documents in later sections will build on skills taught earlier and allow the learner to look back and see how the foundational items (icons and lists) are used to create more complex documents. Instructors should always remember that this program teaches strategies involved in developing documents and understanding these strategies makes reading and understanding any document easier.

Note: This program teaches document strategies, not trade specific content. It is important to keep this in mind when reviewing supporting documents with learners.

The activities in each section are an opportunity for both the instructor and learner to determine if the information has been successfully delivered and understood, whether further review is required or if advancing to the next module is warranted.

Glossary:

Trade terminology is used throughout this refresher. Refer to the glossary at the beginning of this guide for definitions. If reading the text on computer, click on the highlighted words for definitions.



LAYOUT OF DOCUMENT USE REFRESHER MODULES:

NOTE: Although this curriculum has been designed so that each module can be taught individually, modules 1 and 2 should be completed before attempting other modules.

Each module consists of the Curriculum, Supporting Documents Appendix A and Activity Worksheets Appendix B. They have been designed in PDF format and grouped separately for ease of printing and computerized lesson plans.

Each module begins with an overview of the topics to be discussed and the " Learning Objectives" that will detail the learning to take place. The instructor should review the learning objectives prior to and at the completion of each module to ensure they have been covered and delivered successfully.

Strategies for Instruction

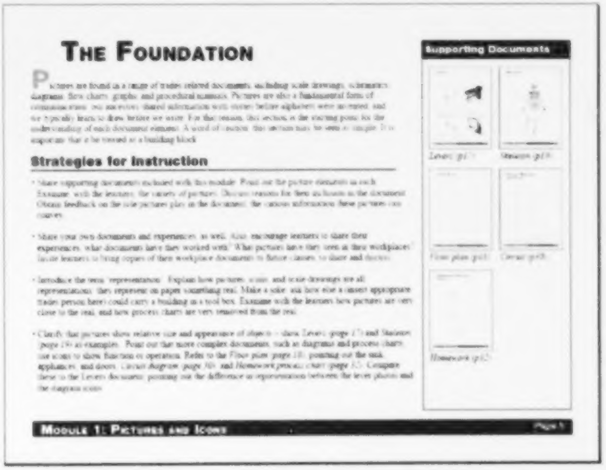
This section will provide the instructor with a list of teaching points to be covered and the order in which they should be taught as well as the questions to be asked about the Supporting Document. It will highlight new terms and their meaning and will provide the instructor with the recommended Supporting Document to use during instruction.

In the example The Foundation shown to the right the first paragraph provides an overview of the teaching point to be covered next.

The first bullets in the Strategies for Instruction provide the instructor with detailed information about the discussion topic.

Later bullets introduce the supporting documents by page and document title in order to assist the instructor in conveying the information to the learners. In the example Supporting Documents Levers (page 17) & Skeleton (page19) are used to show relative size and appearance of objects. The Floor plan (page 18), Circuit diagram (page 30) and Homework process chart (page 32) are used to indicate the use of pictures and icons in more complex documents.

Each curriculum page contains a rectangular text box on the right hand side of the page. This box provides a quick reference (thumbnail) of the Supporting Document or Activity, the document title and page number in the order in which they will be used in each module.



THE FOUNDATION

Strategies for Instruction

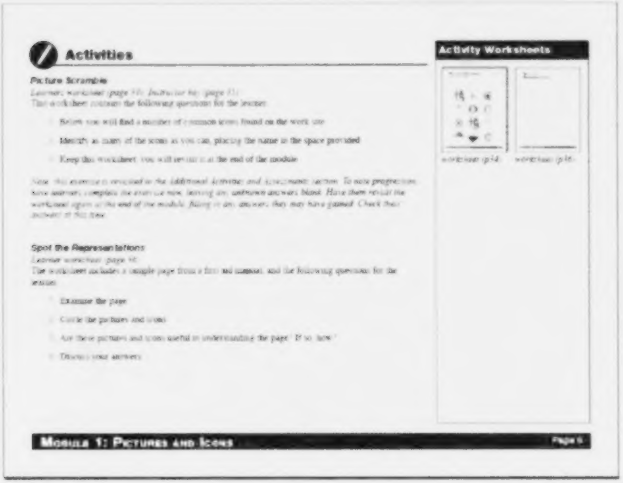
Supporting Documents

MODULE 1: PICTURES AND ICONS

Activities

This section lists the recommended Activities that instructors should complete with their class to determine if learning has taken place. Each Activity Section is highlighted with the pencil icon.

An activities section will be found immediately following a teaching point. For example in module 1 The Foundation topic listed above has an Activities Section on page 6. The Activity questions will be found in the curriculum as well as on the Activity worksheet.

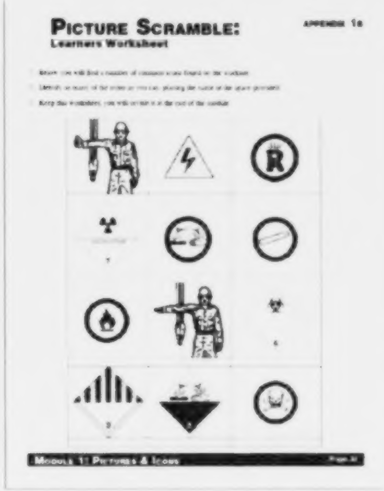


Activities

Activity Worksheets

Module 1: Pictures and Icons

If the Activity Worksheet must be completed, an instructor Key has been provided with the answers.



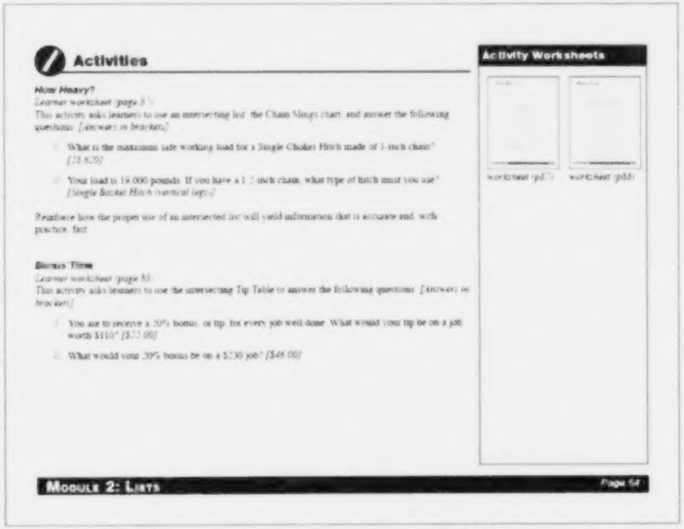
Picture Scramble:
Learners Worksheet

Module 1: Pictures & Icons

Picture Scramble:
Instructor Key

Module 1: Pictures & Icons

If the Activity Worksheet lists questions, the answers will be provided in brackets at the end of each question in the curriculum section of each module.



Activities

How Heavy?

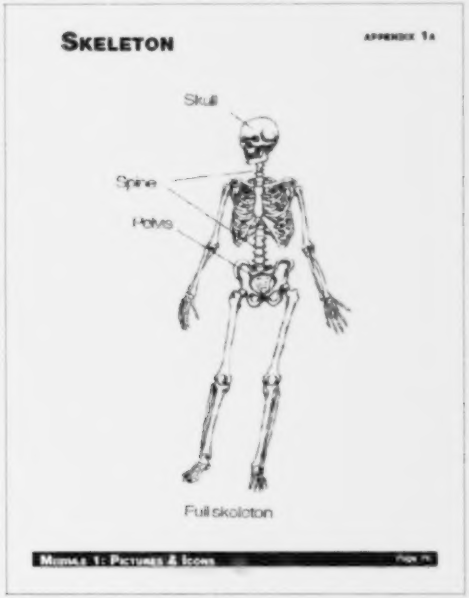
Bonus Time

Activity Worksheets

Module 2: Lists

Supporting Documents

These documents accompany each module and will be referred to in the "Strategies for Instruction" section as required. These documents are located in Appendix A of each module. The corresponding page number will identify each document.



SKELETON

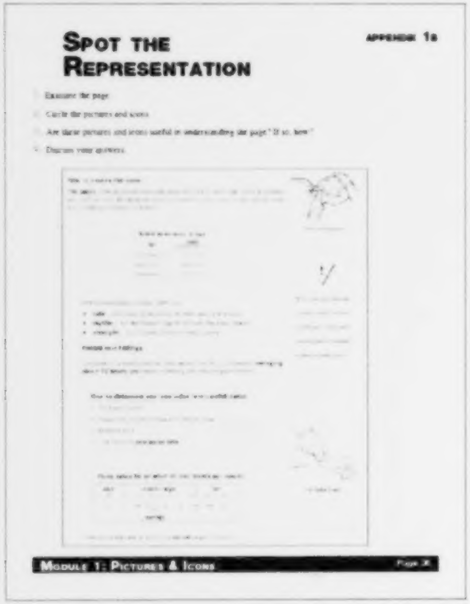
APPENDIX 1A

MODULE 1: PICTURES & ICONS

NOTE: Many of these documents have been taken from "original" documents and intended to convey teaching points. Remind learners that it is not necessary to understand the content of the samples.

Activity Worksheets

These documents accompany each module and will be referred to in the "Activities" section as required. The Activity Worksheets also include an instructor key with correct answers for any activities that are new or unfamiliar to the instructor. The Activities Worksheets are located in Appendix B of each module. The corresponding page number will identify each activity worksheet.



SPOT THE REPRESENTATION

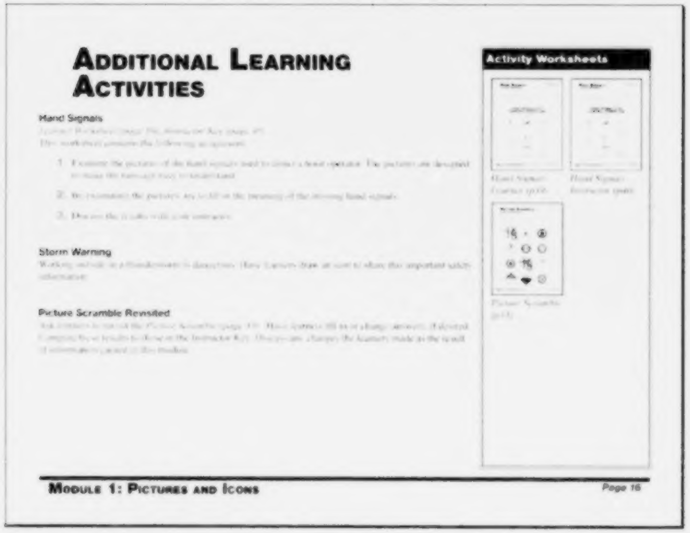
APPENDIX 1B

- Examine the page
- Circle the pictures and icons
- Are these pictures and icons useful in understanding the page? If so, how?
- Discuss your answers.

MODULE 1: PICTURES & ICONS

Additional Learning Activities

These are found at the end of each module and provide the instructor with activities that can be used to aid learning or to informally assess the learner's comprehension.



ADDITIONAL LEARNING ACTIVITIES

Hand Signals

Storm Warning

Picture Scramble Revisited

Activity Worksheets

MODULE 1: PICTURES AND ICONS Page 16

NOTE: The Supporting Documents and Activities provided with this curriculum are general in nature and intended to serve a wide trade audience. Instructors and learners are encouraged to source documents that better reflect the learner's workplace or specific trade.

Informal Evaluation:

It is important for the instructor to determine the Document Use essential skill level of each learner prior to the first session. Each learner will be starting at a different level and instructors must ensure the class proceeds at a pace that will allow each learner to grasp the new strategies while keeping the interest of those with higher skill levels.

Activities Worksheets (Appendix B) are located at the end of each module. The activities documents include a list of questions that are designed to test the learner's comprehension of the material presented in each module. Instructors should review these activities with each learner prior to the first class. This exercise will allow both the instructor and the learner to determine document use skill levels or gaps and will provide a means of determining whether learning has taken place by reviewing these activities upon completion of each module.

The informal evaluation will also allow the instructor to provide each learner with an overview of the topics and material that will be covered in this program.

DOCUMENT USE REFRESHER FOR APPRENTICES

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Thanks to Human Resources and Skills Development Canada for financial assistance and continuing support of Essential Skill research and development of related products.

This Refresher was designed based on the work of the late Dr. Peter Mosenthal and his partners. His strategies are the driving principles throughout this document.

Thank you to the Association of Workplace Educators of Nova Scotia (Awens) and the instructors who lead the pilot testing of this Refresher Program. Their feedback was important to improving the quality of the final document.

Thank you to the apprentices who participated in the pilot testing of this refresher and a special thank you to the International Brotherhood of Electrical Workers (IBEW) for their support.

And finally thank you to all who contributed in any way to the completion of the Document Use Refresher.

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Module 1

Document Use
Refresher
For Apprentices

PICTURES AND ICONS

Module 1

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INTRODUCTION

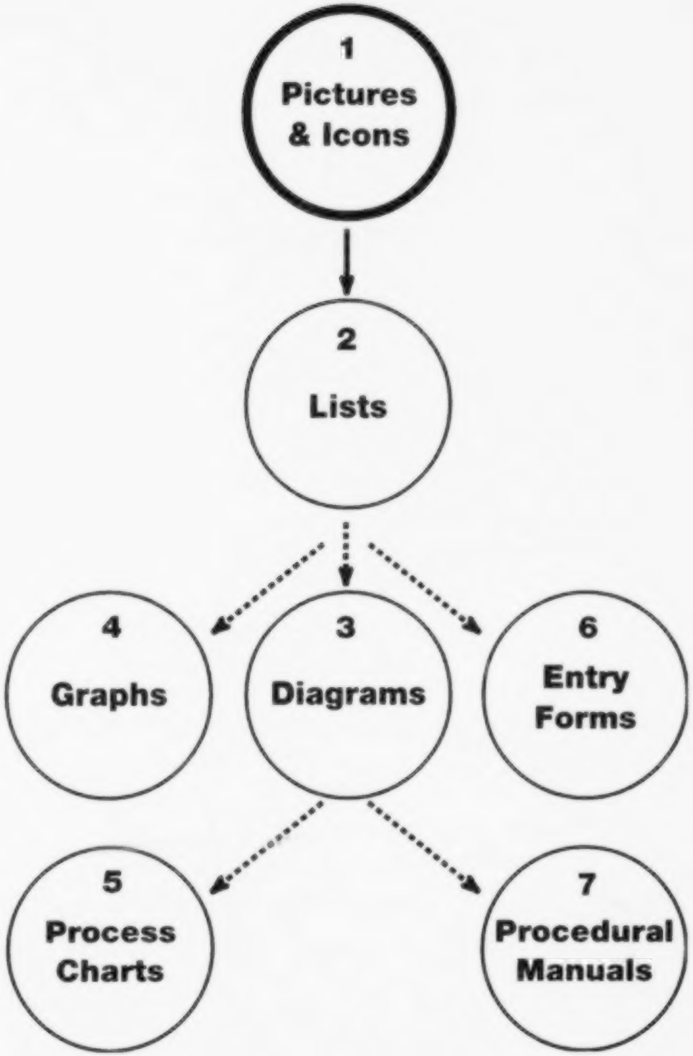
This module contains teaching and learning strategies applicable to all levels of document use, from the very simple to the complex. It is understood that some modules may need to be shortened or eliminated to meet time restrictions or student requirements. No matter the audience or the time frame, include Module 1: Pictures and Icons in your teaching schedule. Although pictures and icons may seem too simplistic or irrelevant to some busy tradespeople anxious to read flow charts and schematics, do not skip this module. Be understanding but firm. Even when this module serves as a review, it should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams*, *Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete Module 3: Diagrams before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learning activities, sample documents, and activity worksheets. Please note, and reassure your learners, that the activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define pictures as near-real representation of objects or situations.

Define icons as an abstract representation of the real.

Identify and name safety and trade-related pictures and icons in workplace documents.

Identify the presence of and uses of pictures and icons in a variety of safety and trade-related workplace documents.

Identify the meaning of colour (red, green, yellow, etc.) and shape (circle, hexagon, triangle, etc.) enhancements used in pictures and icons to communicate information in workplace documents.

Apply knowledge of icon and picture use in workplace documents to create their own representations.

To the Instructor...

Module 1: Pictures and Icons is the first of two foundation modules for Document Use Refresher for Apprentices.

Learner Prerequisites:

- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent

Instructor Materials:

- Module 1 teaching resources, including sample documents and activity worksheets
- Optional: Flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

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THE FOUNDATION

Pictures are found in a range of trades-related documents, including scale drawings, schematics, diagrams, process charts (also known as flowcharts), graphs, and procedural manuals. Pictures are a fundamental form of communication. Our ancestors shared information and stories with pictures before alphabets were invented, and we typically learn to draw before we write. For that reason, this section is the starting point for the understanding of each document element.

A word of caution is necessary. This module may appear simple, but it is important that it is treated as a building block.

Strategies for Instruction

- Present supporting documents included with this module. Point out the picture elements in each. Examine, with the learners, the variety of pictures. Discuss reasons for their inclusion in the document. Obtain feedback on the role pictures play in the document, the various kinds of information these pictures can convey.

- Present your own documents and experiences. Also, encourage learners to share their experiences. What documents have they worked with? What pictures have they seen in their workplaces? Invite learners to bring copies of their workplace documents to future classes, to share and discuss.

- Introduce the term 'representation'. Explain how a picture, icon, or scale drawing represents on paper an item that is real. The picture on paper is composed of lines, curves, and shading rather than bricks, wood, or metal. The picture is not reality, but a representation of it. Ask how else an electrician, plumber, or other tradesperson (include a trade from your class) could carry a building in a tool box. Examine with the learners how pictures are very close to reality and how process charts are further removed from reality.

- Clarify that pictures show relative size and appearance of objects – show *Levers (page 18)* and *Skeleton (page 19)* as examples. Point out that more complex documents, such as diagrams and process charts, use icons to show function or operation. Refer to the *Floor Plan (page 20)*, pointing out the sink, appliances, and doors; *Circuit Diagram and Icons (page 21)*; and *Homework Process Chart (page 22)*. Compare these to Levers, pointing out the differences in the kinds of representation used in the lever photos and the diagram icons.

Supporting Documents

LEVERS

Levers (page 18)

SKELETON

Skeleton (page 19)

FLOOR PLAN

Floor Plan (page 20)

CIRCUIT DIAGRAM AND ICONS

Circuit Diagram & Icons (page 21)

HOMEWORK PROCESS CHART

Homework Process (page 22)

Activities

Picture Scramble

Learner Worksheet (page 33); Instructor Key (page 34)

This worksheet contains the following assignment:

1. Examine the page of common icons found on the worksite.
2. Identify as many of the icons as you can, placing the name in the space provided.
3. Keep this worksheet; you will revisit it at the end of the module.

NOTE: This exercise is revisited in the Additional Activities and Assessments section. To note progression, have learners complete the exercise now, leaving any unknown answers blank. Have learners revisit the worksheet again at the end of the module, filling in any new answers. Check the answers at that time.

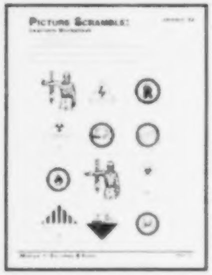
Spot the Representations

Learner Worksheet (page 35)

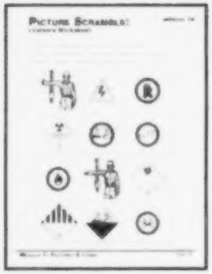
This worksheet includes a sample page from a first aid manual and the following assignment:

1. Examine the page.
2. Circle the pictures and icons.
3. Are these pictures and icons useful in understanding the page? If so, how?
4. Discuss your answers.

Activity Worksheets



Picture Scramble Learner (p33)



Picture Scramble Instructor (p34)

Spot the Representations (p35)

PICTURES AND ICONS DEFINED

Just as building materials or ingredients come in different grades, pictures come in different levels of detail. One person's picture may be another person's image. This topic is an opportunity to identify the terms used in this teaching resource and reinforce the benefit of consistency. Trade specific standards are set to facilitate understanding. It is important to respect these standards and to understand why they have been developed and what they mean.

Strategies for Instruction

- Acknowledge differing terms for pictures and icons, such as images, symbols, etc. Identify the term mimetic. Explain that the term refers to anything that mimics real life, such as a photograph, drawing, or diagram.

- Reinforce that pictures and icons refer to images.

- Revisit the term representation. Review a selection of supporting documents – as many as you wish. Ask what is similar about each. Ask what is different.

- Introduce the *Complexity Chart (page 27)* as a way to show degree of difficulty of representations. Draw a horizontal line on a whiteboard or flipchart. Label left side easy to understand and right side difficult to understand.

- Introduce the term concrete. Explain that a concrete representation is very close to the real, like a photograph or line drawing. Label Concrete at the far left of the Complexity Chart. Present sample documents, including the *Skeleton (page 19)* and *Levers (page 18)*. Discuss why concrete representations are easier to understand.

- Define picture. Add the term to the Complexity Chart. Show its position near the concrete. Acknowledge other descriptive terms and clarify that for this course, picture is the term used. Point out features such as simple, real, shows item or action. Present samples including *Components and Tools: Garage Door Opener (page 23)* and *Visual Metric Conversion (page 24)*.

Supporting Documents

Complexity Chart (page 27)

Skeleton (page 19)

Levers (page 18)

Components and Tools (page 23)

Visual Metric (page 24)

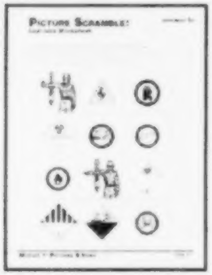
- Introduce the term abstract. Explain that an abstract representation is further removed from reality. Add the term to the Complexity Chart near the difficult end. Discuss examples such as washroom signs, a wet floor sign, *Levers (page 18)*, and *Picture Scramble (page 33)*. Discuss why abstract representations can be difficult to understand. Discuss why abstract representations are used and their advantages. Brainstorm ways of understanding them.

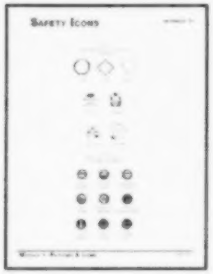
- Define icon. Show its position on the Complexity Chart, close to Abstract. Point out the features that distinguish it from a picture: more removed from the real, represents an item or action. Emphasize patterns. Icons often contain an element of reality and often follow a pattern.
  Reinforce with samples such as
    - A skull in safety symbols, as seen in *Safety Icons (page 25)*, *WHMIS Icons (page 26)*
    - A cross in first aid – seen on books, hospitals, uniforms, work stations
    - The *Stop Lights (page 27)*

- Ask why is an icon used rather than a picture? Discuss answers, such as how icons can be understood across cultures, or how it is easier to draw an icon than to reenact the event. Ask who would want to pose for a WHMIS scene or a washroom sign, and discuss the responses.

Supporting Documents

Levers (page 18)


Picture Scramble (page 33)


Safety Icons (page 25)

WHMIS Icons (page 26)

Stop Lights (page 27)

Activities

Build a Collection

Use poster board, flip chart paper, or the wall to build a classroom collage of icons. Ask learners to contribute to the collage, sharing copies of icons. Build the collection throughout this refresher course. Keep a section of the collage for stumpers: icons that are challenging to figure out. At the end of the course, reflect on the size and variety of the collection. Discuss those ions that were identified as challenging.

Complexity Chart

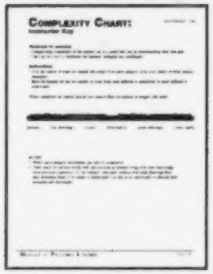
Learner Worksheet (page 36); Instructor Key (page 37)
The worksheet contains the following assignment:

1. Review the sample documents provided.
2. Place documents on the Complexity Chart, according to how difficult they are to understand.
3. Keep this assignment as it will be used in future modules.

Present the supporting documents included in this module. Assist learners, where needed, in ordering the documents from easy to difficult. Use the Instructor Key as a guide to discuss results. Use the discussion to highlight comfort zones and areas of difficulty.

Activity Worksheets

Complexity Learner (p36)



Complexity Instructor (p37)

ENHANCEMENTS

As mentioned previously, pictures and icons come in various levels of detail. Those details are known as enhancements. In this section, some common enhancements are introduced and the role they play in sharing information is explored.

Strategies for Instruction

- Present the *Enhancements Template (page 28)*. Liken an enhanced picture or icon to a souped-up motor, a superwired circuit, a high-flow plumbing outlet, or other trades-related example. The basic version will do, but the enhanced model does more in the same or shorter period of time.

- Introduce shape. Show how the meaning of the safety symbols differs with a triangle, rectangle, or octagon. Relate it to traffic signs, where even without the word, we can recognize a stop sign.

- Discuss colour. Affirm that colour is not always present in documentation or signage, but when available, it is a powerful communication tool. Refer to the *Enhancements Template (page 28)*. Brainstorm colours routinely seen on the job site such as on signs, control panels, and keypads, for example. Compare to real life: team colours, traffic lights, vehicle paint, wet floor sign. Explain the choices of colours for WHMIS and safety symbols. Discuss how or why these work.
  NOTE: Documents reinforcing these concepts have been provided in colour, and any of these documents presented to learners should be reproduced in colour.

- Introduce layered icons. Start with double-layered icons. Use a No Smoking sign as an example. Point out the two layers ie. a cigarette icon and a circle with a line through it. Discuss how the layers works together to share a message. Relate to the previous discussion by pointing out the colour of the circle and line. Present *Multi-Layered Icons (page 29)*. Point out how each of the three layers work together to share a specific message.

Supporting Documents

Enhancements (page 28)

Multi-Layered Icons (page 29)

- Briefly revisit more complex pictures, including the *Floor Plan (page 20)*, *Dangerous Goods Icon Defined (page 30)*, and *Homework Process Chart (page 22)*. Point out legends and scales; briefly describe what they are, how they work, and how they help share information.

- To summarize, return to the *Dangerous Goods Icon Defined (page 30)*. Point out the various enhancements and how they work together to give a complete message.

- Use the No Parking sample on *Enhancement Template (page 28)* to demonstrate double-layer icons.

Supporting Documents

Floor Plan (page 20)

HOMEWORK PROCESS CHART

Homework Process (page 22)

DANGEROUS GOODS ICON DEFINED
1203

Dangerous Goods Icon (page 30)

ENHANCEMENT TEMPLATE

Enhancements (page 28)

Activities

Protect Your Space

Present this scenario: your workmate has borrowed your tools for the last time. Draw a 'do not' icon to put on your locker to warn borrowers away.

Assist where appropriate. Reinforce the role that shape, colour, and other enhancements play in icons such as the large red circle with a line through it. Invite learners to share and display their creations.

INTERACTION WITH OTHER DOCUMENT ELEMENTS

Previously we have shown the progression of pictures and icons from simple to more detailed representations. This topic introduces how a picture or icon – simple or detailed – works within a more complex document such as a diagram, graph, process chart, or procedural manual.

Strategies for Instruction

- Review the Complexity Chart with concrete at one end and abstract at the other. Use this when examining the examples that follow. Observe and discuss any patterns. For example, do learners find documents with many elements more difficult? Do pictures make some documents easier to understand?
- Refer to the *Floor Plan (page 20)*. Discuss what information it is designed to share. What would it be without a picture? What does the picture alone say?
- Repeat with the *Levers (page 18)*, *Visual Metric Conversion (page 24)*, and *Emergency Procedures (page 31)*.

Supporting Documents

Floor Plan (page 20)

Levers (page 18)

Visual Metric (page 24)

Emergency Proc. (page 31)

Activities

Fill in the Picture

Learner Worksheet (page 38)

This worksheet contains the following assignment:

1. Read the text.
2. Draw a picture representation of the text. Find a supporting document which fits this text.
3. Re-examine the text, your pictoral representation and the supporting document. Which gives you the clearer message? Which do you prefer? Why?

Activity Worksheets

Fill in the Picture (p38)

ADDITIONAL LEARNING ACTIVITIES

Hand Signals

Learner Worksheet (page 39); Instructor Key (page 40)
This worksheet contains the following assignment:

1. Examine the pictures of the hand signals used to direct a hoist operator. The pictures are designed to make the message easy to understand.
2. By examining the pictures, try to fill in the meaning of the missing hand signals.
3. Discuss the results with your instructor

Storm Warning

Working outside in a thunderstorm is dangerous. Have learners draw an icon to share this important safety information.

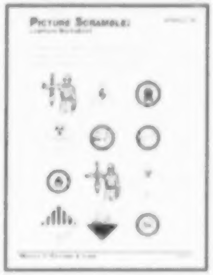
Picture Scramble Revisited

Ask learners to revisit the *Picture Scramble (page 33)*. Have learners fill in or change answers, if desired. Compare these results to those in the Instructor Key. Discuss any changes the learners made as the result of information gained in this module.

Activity Worksheets

Hand Signals: Learner (p39)

Hand Signals: Instructor (p40)



Picture Scramble (p33)

Document Use
Refresher
For Apprentices

SUPPORTING DOCUMENTS

Module 1

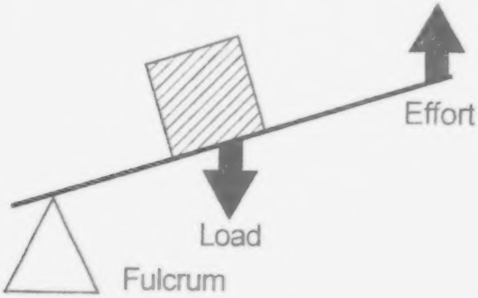
Appendix 1A

LEVERS

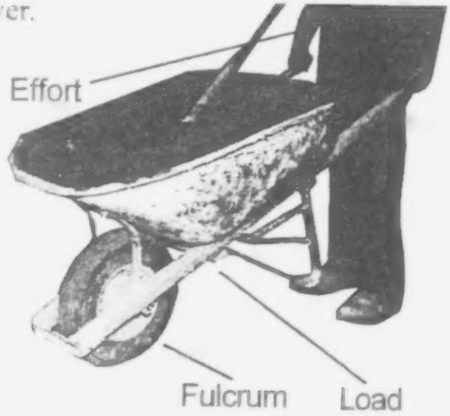
Class 2 Levers

Class 2 levers apply the resistance between the fulcrum and the effort. A wheelbarrow is a typical example of a Class 2 lever.

Examples of Class 2 levers in the trades


Effort
Load
Fulcrum

Basic concept of Class 2 lever

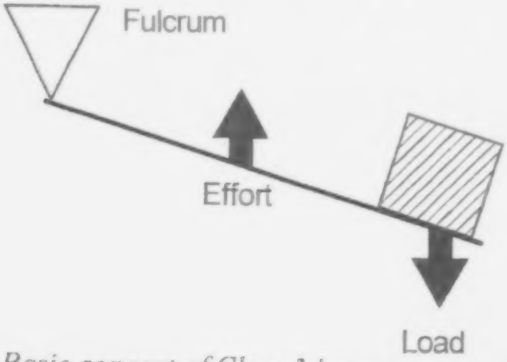

Effort
Fulcrum
Load

Wheelbarrow

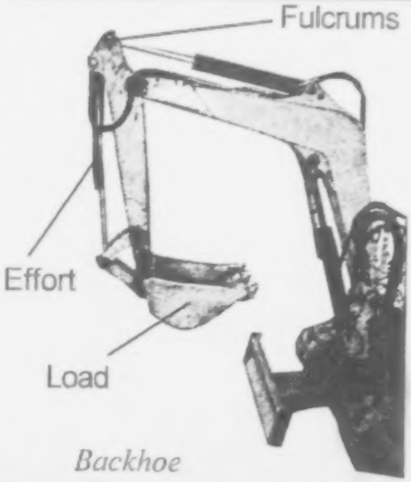
Class 3 Levers

Class 3 levers apply the effort between the resistance and the fulcrum. The effort arm is shorter than the resistance arm. The effort force is always greater than the resistant force. Think of bending and using your arm to carry something. Cranes and backhoes are examples of Class 3 levers.

Examples of Class 3 levers in the trades


Fulcrum
Effort
Load

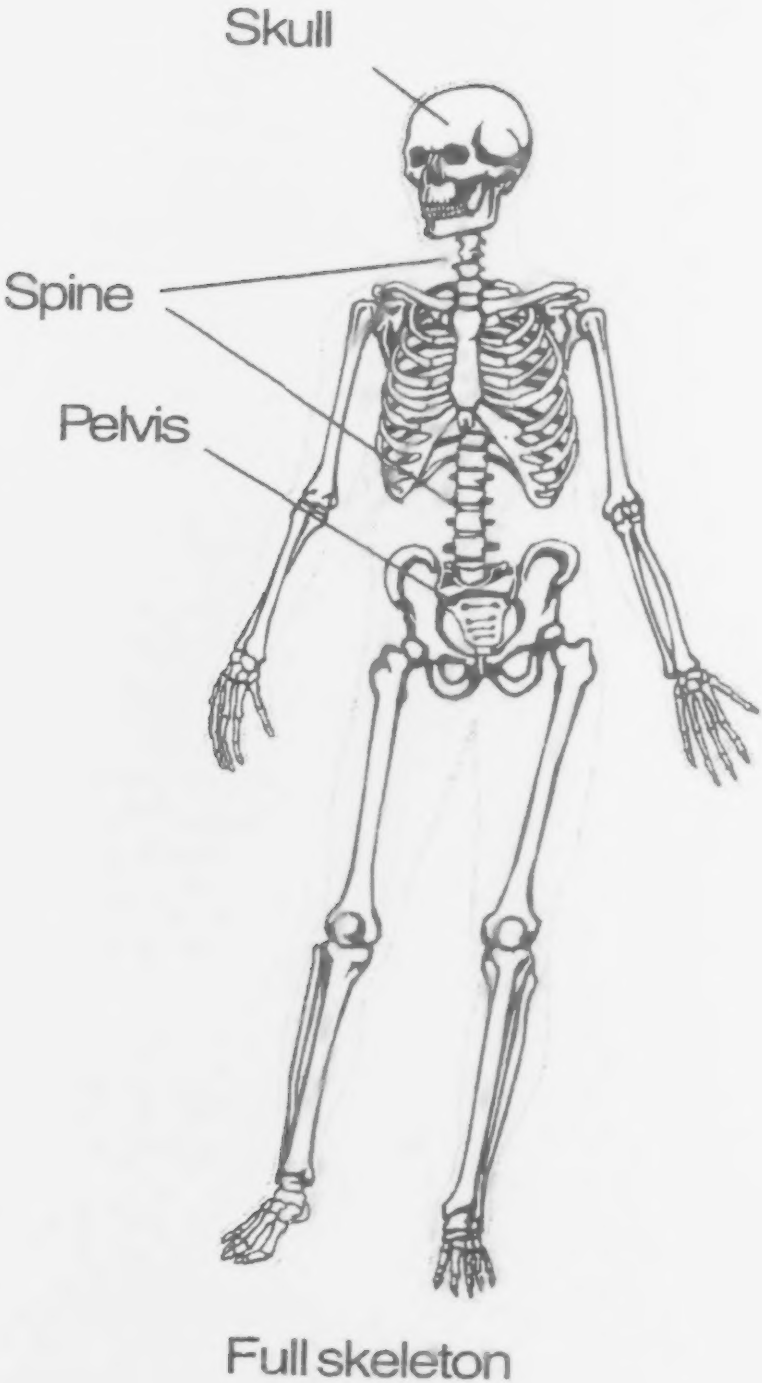
Basic concept of Class 3 lever


Fulcrums
Effort
Load

Backhoe

NOTE: Class 1 Levers are illustrated in *Prying Patterns, Module 3: Diagrams*

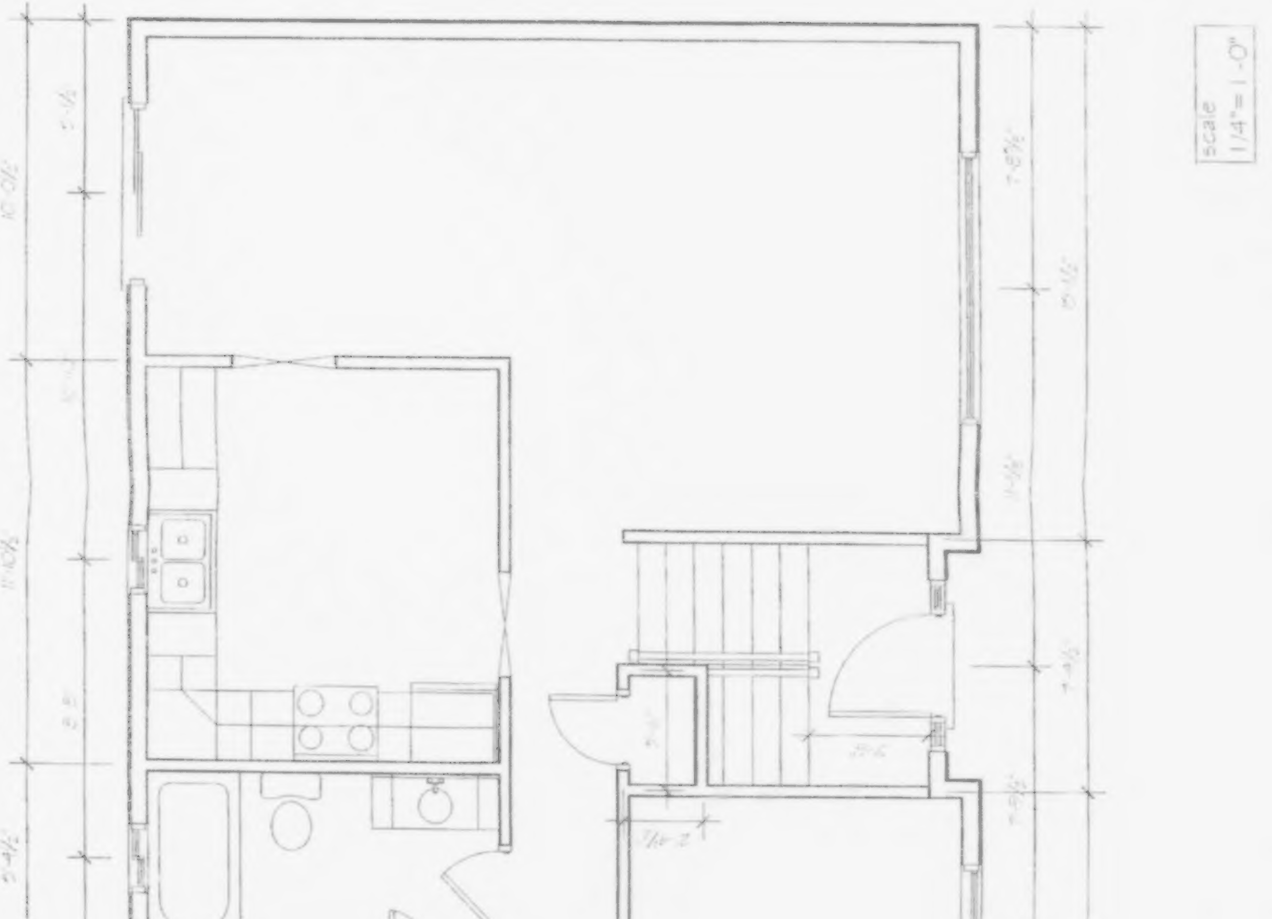
SKELETON


Skull
Spine
Pelvis

Full skeleton

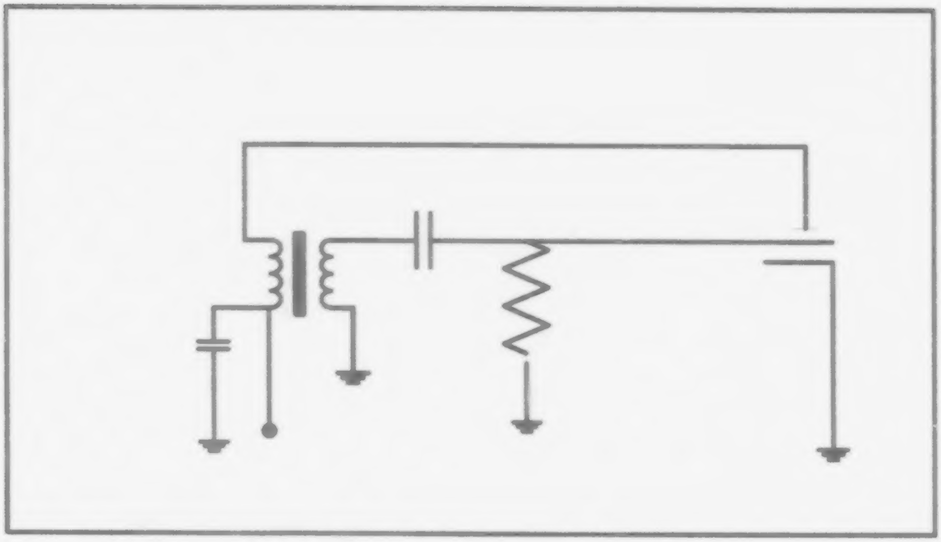
FLOOR PLAN

APPENDIX 1A

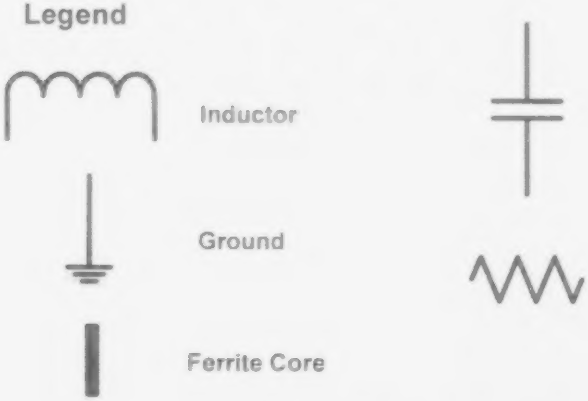

5'-1½
10'-0½
10'-1½
11'-10½
8'-8"
5'-4½
2'-4½
11'-1"
12'-4"
6'-7½
7'-8¾
10'-4½
10'-6½
8'-10½
4'-7"
2'-4½
11'-1"
12'-11"
scale
1/4" = 1'-0"

CIRCUIT DIAGRAM AND ICONS

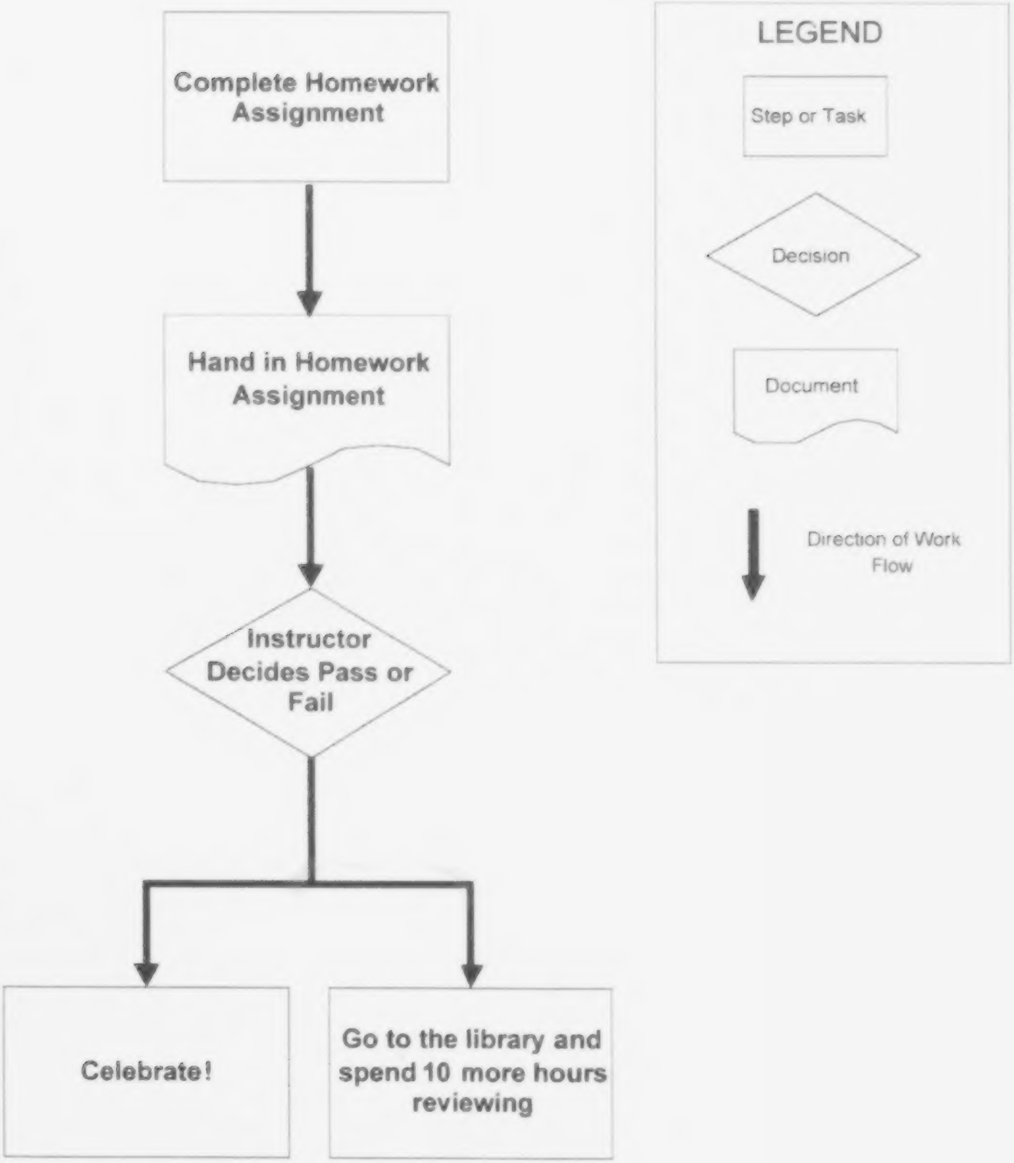
APPENDIX 1A



Legend


Inductor
Capacitor
Ground
Resistor
Ferrite Core

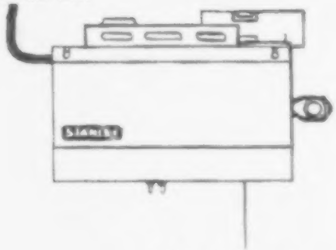
HOMEWORK PROCESS CHART

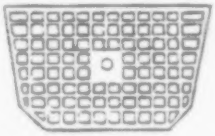

Complete Homework Assignment
Hand in Homework Assignment
Instructor Decides Pass or Fail
Celebrate!
Go to the library and spend 10 more hours reviewing
LEGEND
Step or Task
Decision
Document
Direction of Work Flow

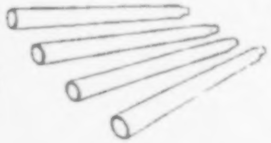
APPENDIX 1A

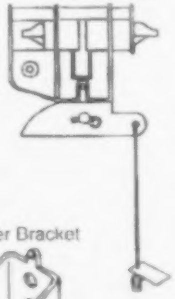
COMPONENTS AND TOOLS: Garage Door Opener

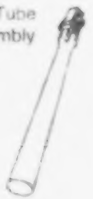
Major Components

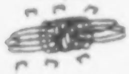

Power Unit

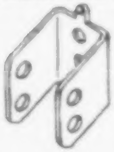

Lamphouse
Supplied With Some Models


4 Tube Sections

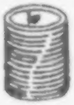

Traveler and
Traveler Carrier

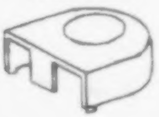

Idler Tube
Assembly

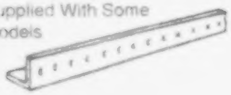

Wire and
Staples

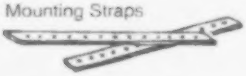

Header Bracket

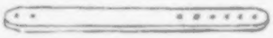
Entrapment
Warning Label

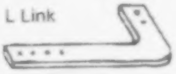

Chain/Cable

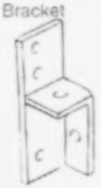

Chain Guard

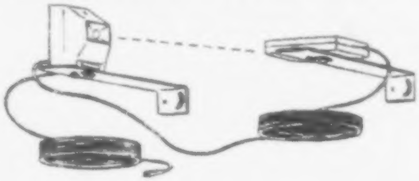

Mounting Angle
Supplied With Some
Models


Mounting Straps

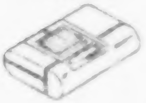

Bar Link

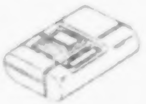

L Link

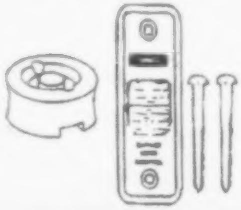

Door
Bracket

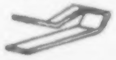

Obstruction Sensor, Brackets, Wire and Screws

Accessories

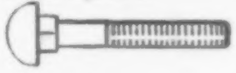

Single Button
Transmitter

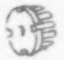

Two Button
Signal Block™
Transmitter

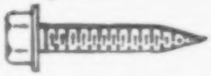

Pushbutton and Screws
(Type provided may vary)

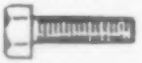

Visor Clip

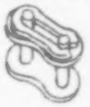
Fasteners

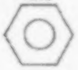

2 - Carriage Bolts

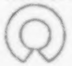

Plug
Button

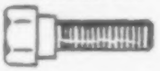

4 - Lag Screws

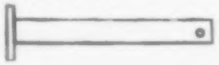

9 - Hex Bolts

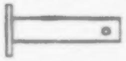

2 - Master Links

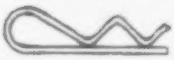

10 - Hex
Nuts


10 - Lock
Washers

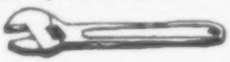

1 - Shoulder Bolt

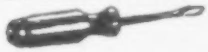

2" Clevis Pin


1" Clevis Pin

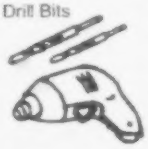

2 - Lock Clips

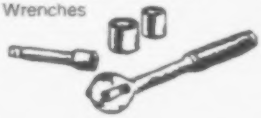
Tools Required ☑ Boxes


☐ Adjustable Wrench


☐ Blade Screwdriver

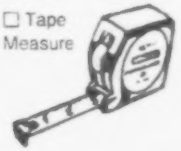
☐ Pencil or Pen


☐ Drill With 1/4" and 5/16" Drill Bits

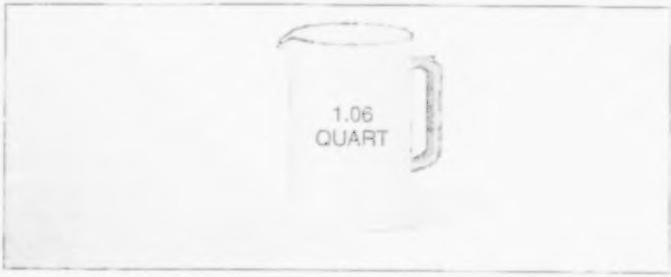

☐ 7/16" and 1/2" Socket Wrenches

☐ Step Ladder

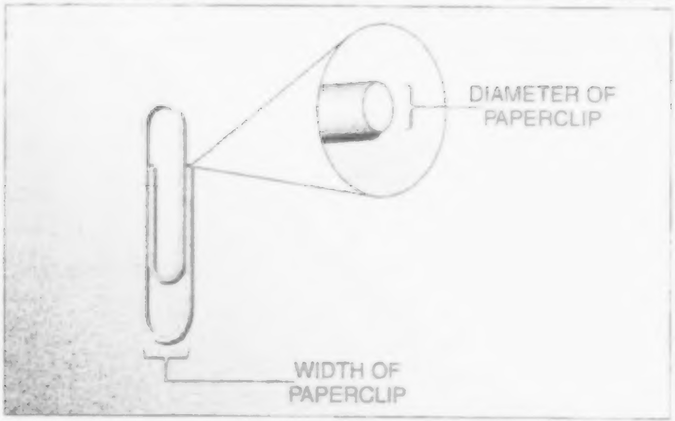
☐ Piece of 2" x 4" Board


☐ Tape Measure

VISUAL METRIC CONVERSIONS

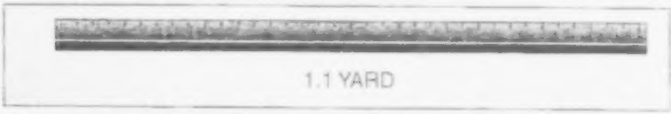


= 1 LITRE

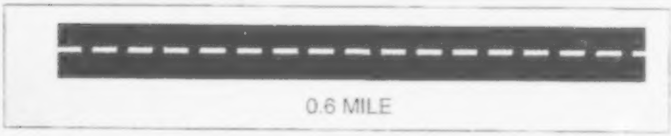

DIAMETER OF PAPERCLIP
WIDTH OF PAPERCLIP

= 1 MILLIMETRE

= 1 CENTIMETRE



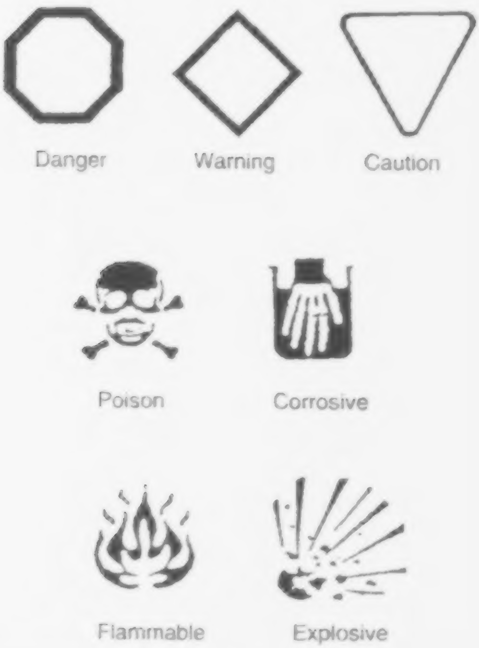
= 1 METRE



= 1 KILOMETRE

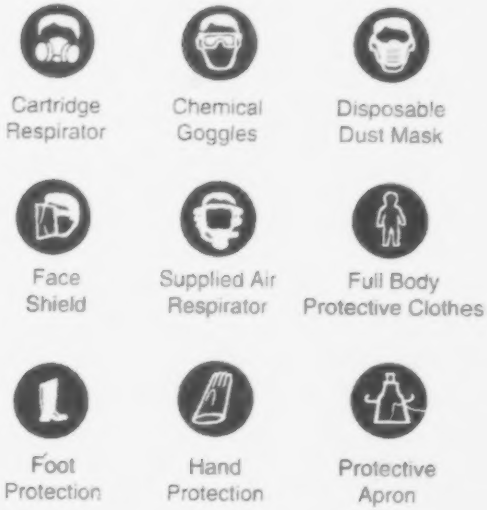
SAFETY ICONS

FIGURE 10
CONSUMER RESTRICTED PRODUCT
SYMBOLS



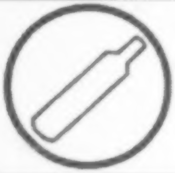
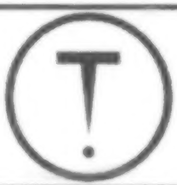
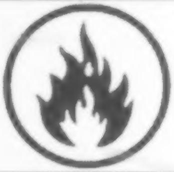
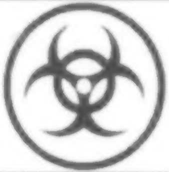
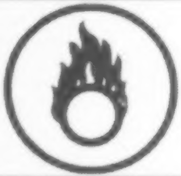
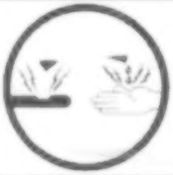
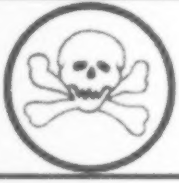
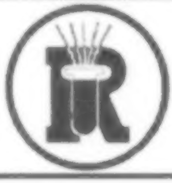
Danger
Warning
Caution
Poison
Corrosive
Flammable
Explosive

FIGURE 5
PERSONAL PROTECTIVE
EQUIPMENT SYMBOLS



Cartridge Respirator
Chemical Goggles
Disposable Dust Mask
Face Shield
Supplied Air Respirator
Full Body Protective Clothes
Foot Protection
Hand Protection
Protective Apron

WHMIS ICONS

	Compressed Gas		Materials Causing Other Serious Toxic Effects
	Flammable and Combustible Material		Biohazardous Infectious Materials
	Oxidizing Material		Corrosive Material
	Materials Causing Immediate and Serious Toxic Effects		Dangerously Reactive Material

COMPLEXITY CHART

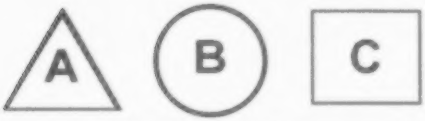
APPENDIX 1A

Easy to understand *(Concrete)*
Difficult to understand *(Abstract)*

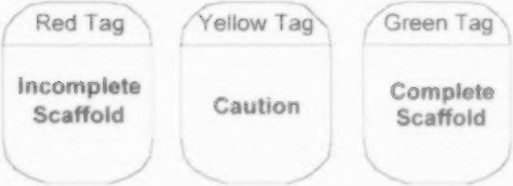
ENHANCEMENT TEMPLATE

In the workplace many pictures and icons are used as quick ways to show important pieces of information. On the right side of this page are basic shapes and colours used in pictures and icons. Below are some examples used in the trades.

Uses in the Trades

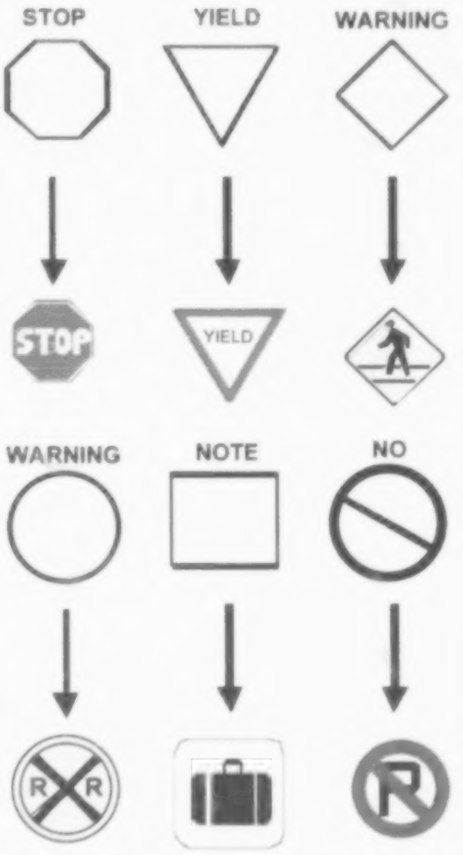


Fire Classification

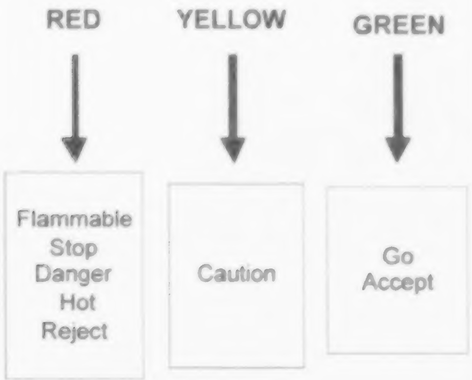

Red Tag
Incomplete Scaffold
Yellow Tag
Caution
Green Tag
Complete Scaffold

Fall Protection

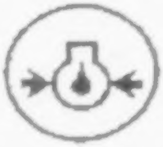
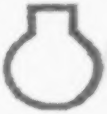
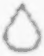
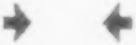
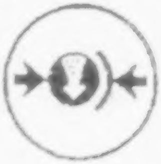
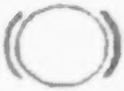
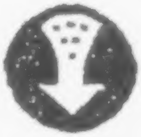
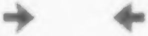
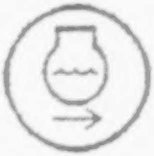
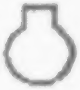
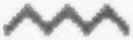
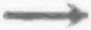
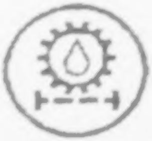
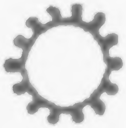
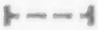
Basic Shapes and Examples


STOP
YIELD
WARNING
STOP
YIELD
WARNING
NOTE
NO
R
R

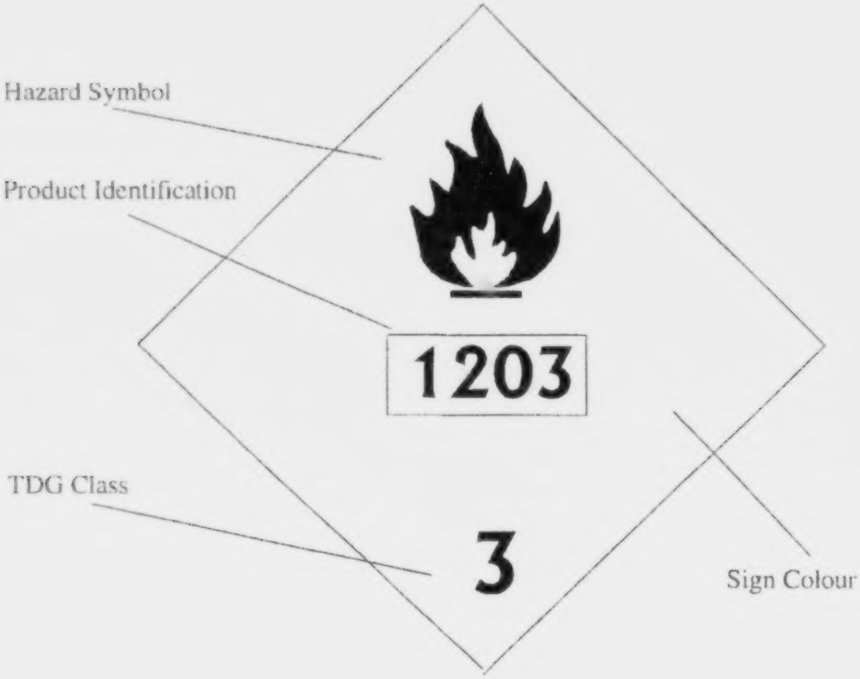
Basic Colours and Meanings


RED
YELLOW
GREEN
Flammable
Stop
Danger
Hot
Reject
Caution
Go
Accept

MULTI-LAYERED ICONS

ALERT INDICATOR	SYMBOLS		
 ENGINE OIL PRESSURE=	 ENGINE +	 OIL +	 PRESSURE
 BRAKE AIR PRESSURE=	 BRAKE +	 AIR +	 PRESSURE
 ENGINE COOLANT FLOW=	 ENGINE +	 COOLANT +	 FLOW
 TRANSMISSION OIL FILTER=	 TRANSMISSION +	 OIL +	 FILTER

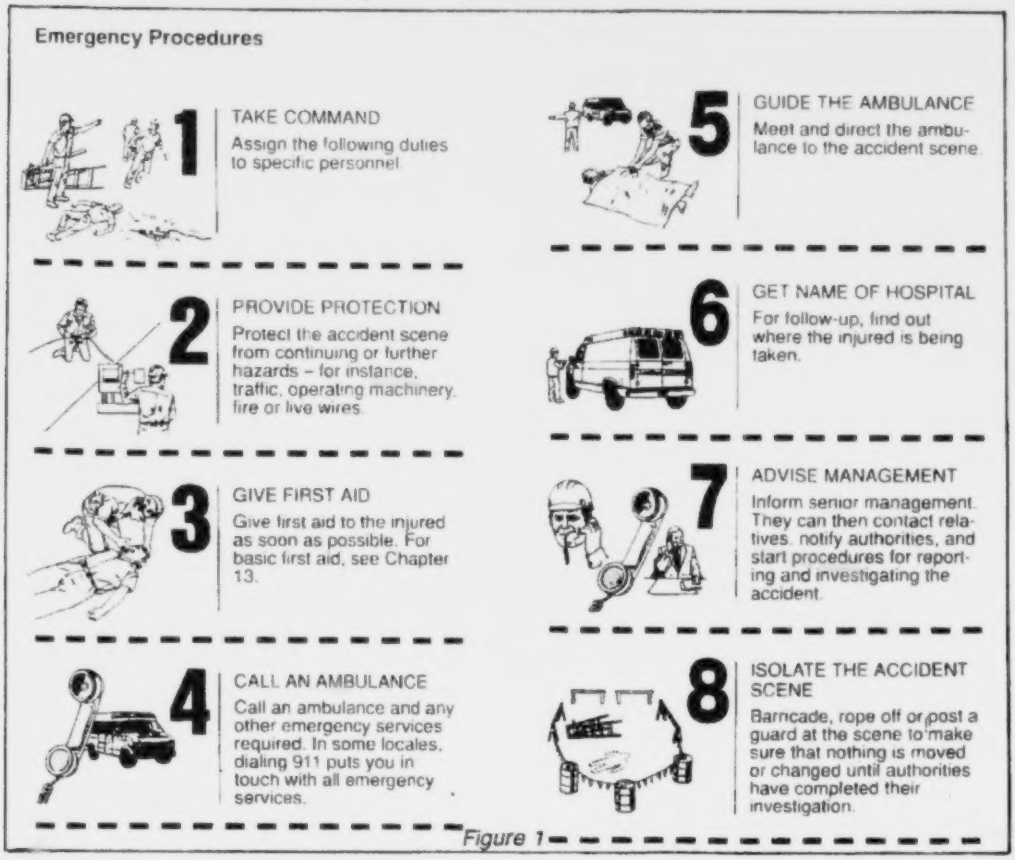
DANGEROUS GOODS ICON DEFINED


Hazard Symbol
Product Identification
1203
TDG Class
3
Sign Colour

Transportation of Dangerous Goods - Classes of Materials

TDG Class	Material	Sign Colour
Class 1	Explosives	Orange
Class 2	Compressed Gas	Red-Flammable Green-Non-poisonous
Class 3	Flammable Liquids	Red
Class 4	Flammable Solids	Red Blue-Reactive Solids
Class 5	Oxidizers	Yellow
Class 6	Poisonous Materials	White
Class 7	Radioactive Materials	Red / Yellow
Class 8	Corrosive Materials	White
Class 9	Other Dangerous Products	White

EMERGENCY PROCEDURES



Emergency Procedures

1 TAKE COMMAND

Assign the following duties to specific personnel.

2 PROVIDE PROTECTION

Protect the accident scene from continuing or further hazards – for instance, traffic, operating machinery, fire or live wires.

3 GIVE FIRST AID

Give first aid to the injured as soon as possible. For basic first aid, see Chapter 13.

4 CALL AN AMBULANCE

Call an ambulance and any other emergency services required. In some locales, dialing 911 puts you in touch with all emergency services.

5 GUIDE THE AMBULANCE

Meet and direct the ambulance to the accident scene.

6 GET NAME OF HOSPITAL

For follow-up, find out where the injured is being taken.

7 ADVISE MANAGEMENT

Inform senior management. They can then contact relatives, notify authorities, and start procedures for reporting and investigating the accident.

8 ISOLATE THE ACCIDENT SCENE

Barricade, rope off or post a guard at the scene to make sure that nothing is moved or changed until authorities have completed their investigation.

Figure 1

Document Use
Refresher
For Apprentices

ACTIVITY WORKSHEETS

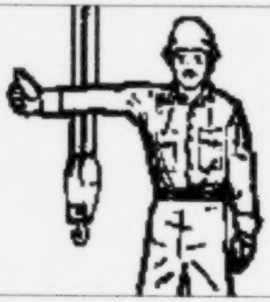
Module 1

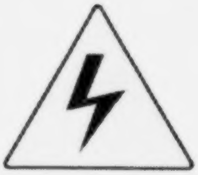
Appendix 1B

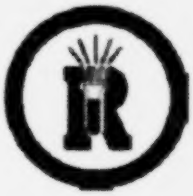
PICTURE SCRAMBLE

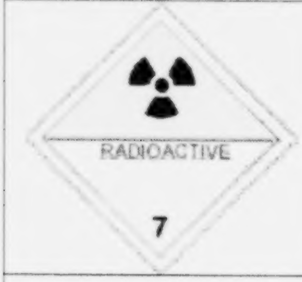
Learner Worksheet

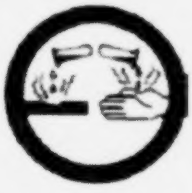
1. Examine the page of common icons found on the worksite.
2. Identify as many of the icons as you can, placing the name in the space provided
3. Keep this worksheet; you will revisit it at the end of the module.

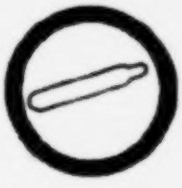


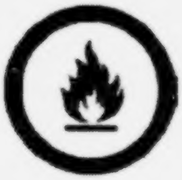


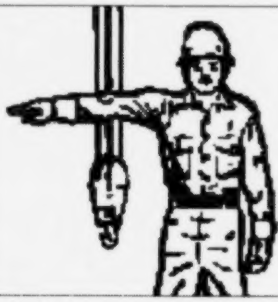


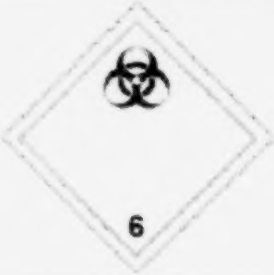


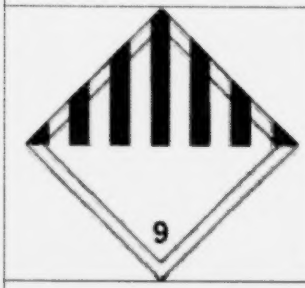


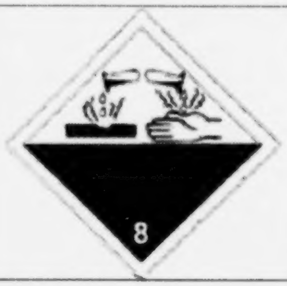


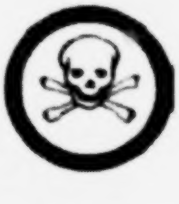






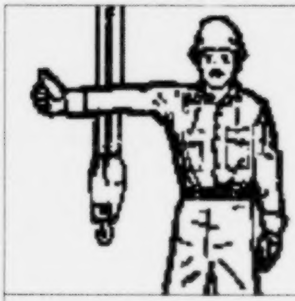
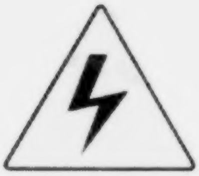
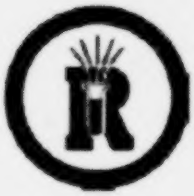
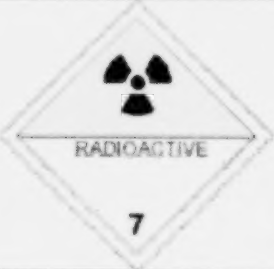
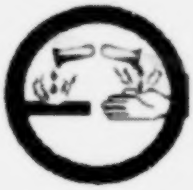
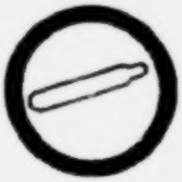
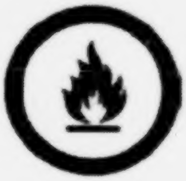
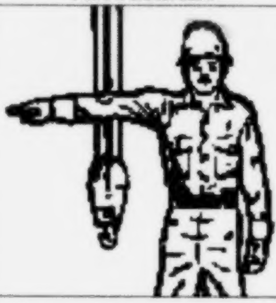
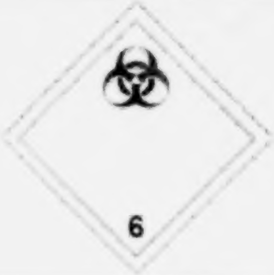
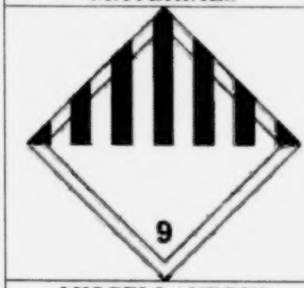
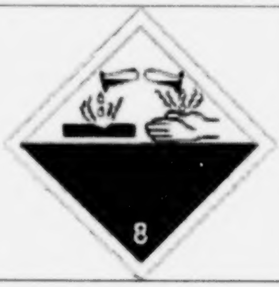
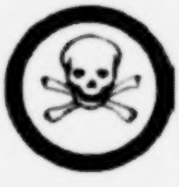






PICTURE SCRAMBLE

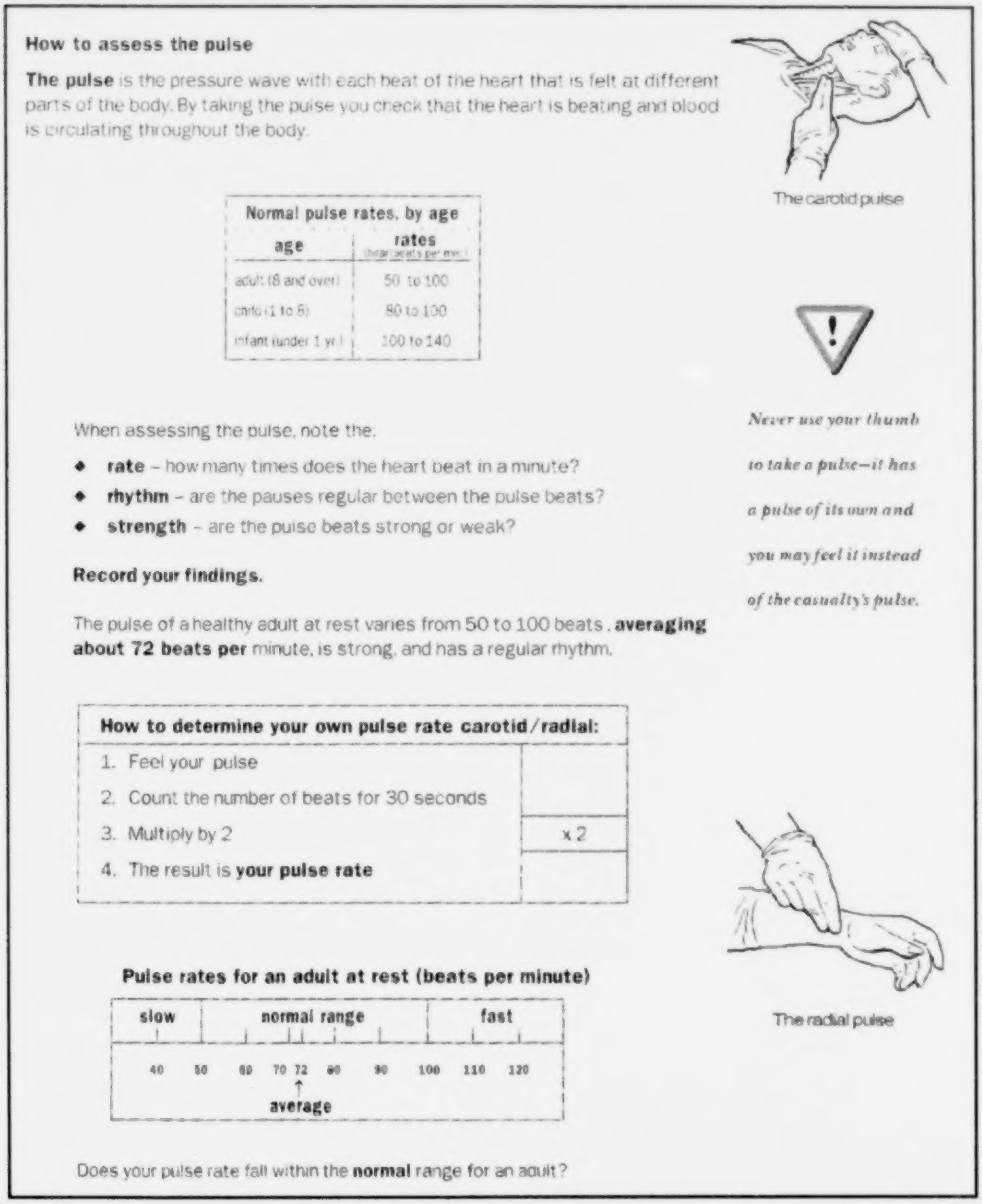
Instructor Key

		
RAISE BOOM	ELECTRICAL HAZARD	DANGEROUSLY REACTIVE MATERIALS
		
RADIOACTIVE	CORROSIVE MATERIALS	COMPRESSED GAS
		
FLAMABLE AND COMBUSTABLE MATERIALS	SWING	POISONOUS AND INFECTIOUS SUBSTANCES
		
MISCELLANEOUS PRODUCTS OR SUBSTANCES	CORROSIVE	MATERIALS CAUSING IMMEDIATE AND TOXIC EFFECTS

SPOT THE REPRESENTATION

Learner Worksheet

1. Examine the page.
2. Circle the pictures and icons
3. Are these pictures and icons useful in understanding the page? If so, how?
4. Discuss your answers.



How to assess the pulse

The pulse is the pressure wave with each beat of the heart that is felt at different parts of the body. By taking the pulse you check that the heart is beating and blood is circulating throughout the body.

The carotid pulse

Normal pulse rates, by age	
age	**rates** (heart beats per min.)
adult (8 and over)	50 to 100
child (1 to 8)	80 to 100
infant (under 1 yr.)	100 to 140

Never use your thumb to take a pulse—it has a pulse of its own and you may feel it instead of the casualty's pulse.

When assessing the pulse, note the:

- **rate** – how many times does the heart beat in a minute?
- **rhythm** – are the pauses regular between the pulse beats?
- **strength** – are the pulse beats strong or weak?

Record your findings.

The pulse of a healthy adult at rest varies from 50 to 100 beats, **averaging about 72 beats per** minute, is strong, and has a regular rhythm.

How to determine your own pulse rate carotid/radial:	
1. Feel your pulse	
2. Count the number of beats for 30 seconds	
3. Multiply by 2	x 2
4. The result is **your pulse rate**	

The radial pulse

Pulse rates for an adult at rest (beats per minute)

slow		normal range					fast		
40	50	60	70	72	80	90	100	110	120
				↑ average					

Does your pulse rate fall within the **normal** range for an adult?

COMPLEXITY CHART

Learner Worksheet

1. Review the sample documents provided.
2. Place documents on the Complexity Chart, according to how difficult they are to understand.
3. Keep this assignment as it will be used in future modules.

Easy to understand *(Concrete)* ⟷ Difficult to understand *(Abstract)*

COMPLEXITY CHART

APPENDIX 1B

Instructor Key

Rationale for exercise:

- Categorizing complexity of documents can be a good first step in understanding their structure
- This can be a tool to determine the learners' strengths and challenges

Instructions:

- Give the learner at least one sample document from each category (your own, theirs, or from module examples)
- Have the learner put the documents in order from least difficult to understand to most difficult to understand

When completed the learner should have placed their documents in roughly the following order.

Easy to understand *(Concrete)* ← → **Difficult to understand *(Abstract)***

(photos) (line drawings) (icons) (Schematics) (scale drawings) (flow charts)

NOTES:

1. Within each category documents can vary in complexity
2. There could be various results with this exercise as learners bring with them knowledge from previous experience. If learners have worked with scale drawings they may determine these to be easier to understand. Use this as an opportunity to discuss their strengths and challenges.

FILL IN THE PICTURE

Learner Worksheet

1. Read the text below.
2. Draw a picture representation of the text. Find a supporting document which fits this text.
3. Re-examine the text, your pictoral representation and the supporting document. Which gives you the clearer message? Which do you prefer? Why?

Injuries to the head, spine and pelvis are always serious because of the danger of injury to the nervous system.

The nervous system is made up of
- brain
- spinal cord
- nerves

These delicate tissues are protected by the:
- Skull
- Spine

The pelvis is a basin-shaped bony structure connected to the base of the spine.

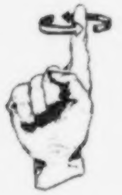
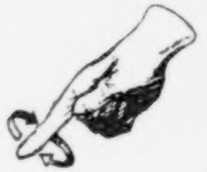
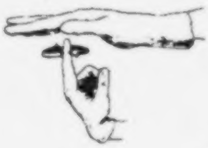
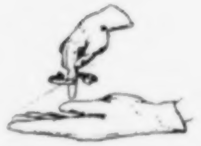
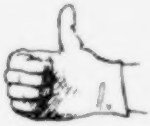
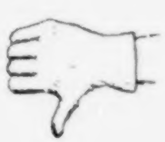
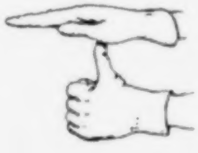
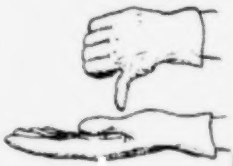
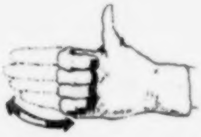
Describe or Insert Picture Here

HAND SIGNALS

Learner Worksheet

1. Examine the pictures of the hand signals used to direct a hoist operator. The pictures are designed to make the message easy to understand.
2. By examining the pictures, try to fill in the meaning of the missing hand signals.
3. Discuss the results with your instructor

HAND SIGNALS FOR HOISTING OPERATIONS

 1	Load Down  2	 3
 4	 5	Boom Down  6
 7	Boom Down Slowly  8	 9

APPENDIX 1B

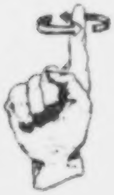
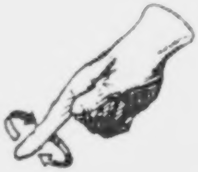
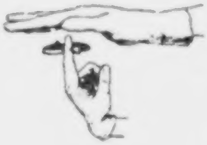
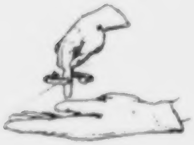
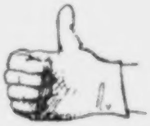
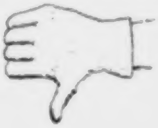
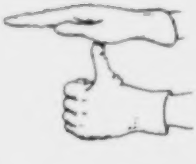
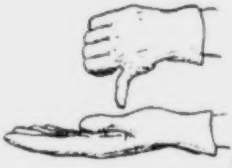
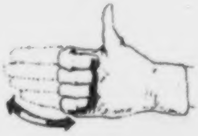
HAND SIGNALS

Instructor Key

Instructions:

- Have the learners fill in as many blanks as possible.
- Discuss results, including reasons for any incorrect responses.

HAND SIGNALS FOR HOISTING OPERATIONS

Load Up  1	Load Down  2	Load Up Slowly  3
Load Down Slowly  4	Boom Up  5	Boom Down  6
Boom Up Slowly  7	Boom Down Slowly  8	Boom Up Load Down  9

Document Use Refresher For Apprentices

LISTS

Module 2

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

nscc

Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

INTRODUCTION

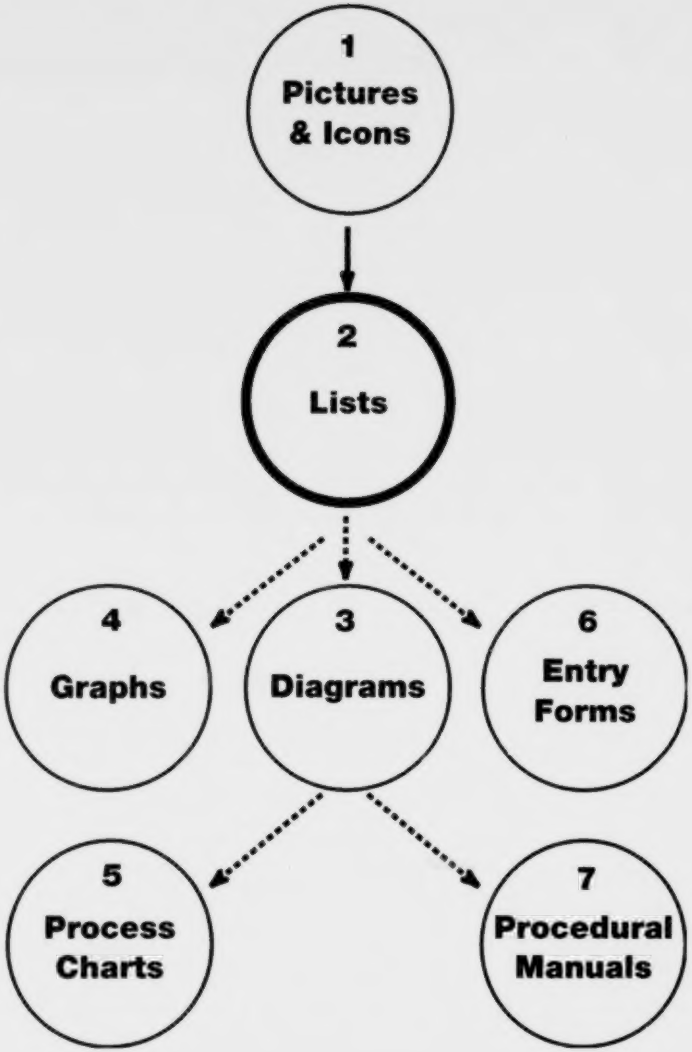
This module contains teaching and learning strategies applicable to all levels of document use, from the very simple to the complex. It is understood that some modules may need to be shortened or eliminated to meet time restrictions or student requirements. No matter the audience or the time frame, include Module 2: Lists in your teaching schedule. Although pictures and icons may seem too simplistic or irrelevant to some busy tradespeople anxious to read flow charts and schematics, do not skip this module. Be understanding but firm. Even when this module serves as a review, it should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams*, *Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete *Module 3: Diagrams* before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learning activities, sample documents, and activity worksheets. Please note, and reassure your learners, that the activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define the four major list types: simple, combined, intersected, and nested.

Identify the presence of and uses of lists in a variety of safety and trade-related workplace documents.

Demonstrate knowledge of lists as organizers of information by locating information in a variety of safety and trade-related workplace documents.

Identify lists within many workplace documents, including graphs, diagrams, process charts, entry forms, and procedural manuals.

Apply knowledge of list use in workplace documents in construction of their own list-based documents.

To the Instructor...

Module 2: Lists is the second of two foundation modules for Document Use Refresher for Apprentices.

Learner Prerequisites:

- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent
- *Module 1: Pictures and Icons*, Document Use Refresher for Apprentices

Instructor Materials:

- Module 2 teaching resources, including sample documents and activity worksheets
- Optional: flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

MODULE CONTENTS

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SIMPLE LISTS

Lists are the key to unlocking the information contained in workplace documents. Think of lists as bricks. Just as bricks are used to build homes, lists are used to build more complex documents. In other words, behind every document - graphs, entry forms, diagrams, process charts, and procedural manuals – is a list.

This topic is called simple lists, but do not be tempted to skip to the more important topics. A simple list is the first step to understanding the structure of lists and how they work; once the list's structure is understood, lists of any size and complexity can provide information quickly.

Strategies for Instruction

- Discuss what is a list? Gain feedback on what learners believe makes a list. Of what use is a list? What does a list look like? Note responses. Invite learners to bring samples to share. Also, include your own samples and experiences where possible.

- Introduce a list by focusing first on what it is, why it is used, and how it is used.

- What is a list. Reinforce the following points:
  - A list is a group of data, words, or numbers that share a common characteristic. A simple list is the most basic list form; it consists of a label and a group of related items. Demonstrate with *Tips for Filling Out Forms (page 60)* and other samples.
  - Introduce the term matrix. Point out that the term table can also be used. Explain that a matrix or table displays information in rows and columns. Lists are matrices, as are process charts, which will be studied in Module 5.
  - Point out that a list does not need lines or a table. Share *Paint Colours (page 61)* and *Occupational Health and Safety Regulation: Fall Protection (page 62)* as examples. Reinforce that a list is a list not because of its appearance but because it is a collection of related items.
  - Discuss how the format of a list – vertical, top to bottom - can assist in locating information, using Paint Colours as an example. Point out the ease in locating information in the bottom block, compared to the top block. Use *Emergency Procedures (page 63)* to show how lists can combine pictures (from Module 1) and text to organize and share information.

Supporting Documents

Filling Out Forms (page 60)

Paint Colours (page 61)

Occup. Health & Safety (page 62)

Emergency Procedures (page 63)

- As other examples, compare the three metric conversion charts: *Visual Metric Conversion (page 64)*, *Conversion Factors (page 65)*, and *Conversion Tables (page 66)*. The first is a picture list, the second a non-line list and the third, a matrix or table. Discuss the uses of each, and obtain feedback from learners on preferences and challenges.

- Why are lists are used. Emphasize these points:
  - Almost every major document form can be expressed as a list. Demonstrate with *From Diagram to List (page 67)*, *From Graph to List (page 68)*, From *Entry Form to List (page 69)*, and *From Process Chart to List (page 70)*. Point out that a list organizes information that can be used on its own or as a layer in more complex documents.

- How are lists used. Introduce this crucial concept: lists are not meant to be read, but are meant to be used to locate a specific piece of information. Demonstrate with samples. For example, if converting inches to centimetres, it is not necessary to read the entire metric conversion chart. Point out how the chart yields the specific information.

- Acknowledge fear as a common obstacle to using lists. Lists can be overwhelming with their dozens or hundreds of items. Learning to use a list and to focus on the needed piece of information can ease that stress. Empathize with difficulties and confusion created by ill-formed or complex lists. Encourage learners to share experiences or opinions. Reinforce that every list, no matter the form or content, can be effectively used once some basic concepts are learned. This section is the first step.

Supporting Documents

Visual Metric (page 64)

Conversion Factors (page 65)

Conversion Tables (page 66)

From Diagram to List (page 67-70)

Activities

Label It

Learner Worksheet (page 81)

Have learners label the picture list provided. Ask learners to keep this worksheet; it will be revisited later in the module.

A List to Build On

Ask learners to brainstorm at least four things they want to learn in this refresher course. Have them organize the information in the form of a simple list. Using flipchart paper make a simple list to display in the classroom. Add items as volunteered by the learners.

Activity Worksheets

Label It (p81)

COMBINED LISTS

A combined list is a simple list with an added layer of detail. Lists, like pictures and icons will vary in complexity dependant upon the information it organizes.

Strategies for Instruction

- Review the basics of lists:
    - A group of items with common characteristics.
    - Are found in nearly all documentation.
    - A simple list consists of a label and related items.
    - All lists are meant to organize and locate information.

- Explain that lists can be simple to complex, depending on the information that needs to be organized.

- Explain that a combined list is a simple list with a second layer that adds detail or description to the first list.

- Use *Conversion Tables (page 66)* and *Boiling Point of Alkanes (page 71)* to reinforce the following:
    - A combined list maintains simple list structure ie. label and related items are the first column
    - The second and subsequent columns must all relate and add detail to the first column
    - Combined list, read horizontally, should flow as a sentence

- Point out that lists may vary in appearances. Reinforce that structure does not always require horizontal or vertical lines. Demonstrate with *Conversion Factors (page 65)*.

- Present the *Table of Contents (page 72)* and *Index (page 73)*. Identify the combined list pattern. Demonstrate the above elements. Briefly point out the ordering systems such as alphabetical, page numbers, subject. Explain that these lists are essential to the use of procedural manuals and will be covered in more detail in *Module 7: Procedural Manuals*.

Supporting Documents

CONVERSION TABLES

Conversion Tables (page 66)

BOILING POINT OF ALKANES

Boiling Point (page 71)

CONVERSION FACTORS

Conversion Factors (page 65)

TABLE OF CONTENTS

Table of Contents (page 72)

INDEX

Index (page 73)

- Explore the steps in gaining information from a complex list:
    - Check the title.
    - Read the column labels.
    - Scan for the columns and rows needed.
    - Record the needed information.

- Reinforce that lists typically flow top to bottom and left to right. Caution against reading the entire list piece by piece; encourage use of labels, columns, and rows to go directly to the needed information.

Activities

Label That List Again

Learner Worksheet (page 82)

Have learners label the three lists given [answers, from left to right: Triangles, Definition, Trade Examples].

Compare results to *Label It (page 81)*. Point out the progression from the simple to the combined list.

Spot That List

Learner Worksheet (page 83)

This activity asks learners to scan a page from a first aid manual and complete the following assignment:

1. Circle the lists.
2. How are these lists similar? How are they different?
3. Discuss your answers.

Find the Page

Learner Worksheet (page 84)

This activity asks learners to scan the Table of Contents and answer the following question:

- What page does the 'Personal Protective Equipment'start on?

Add more questions, if desired, for practice and reinforcement.

Activity Worksheets

Label That List Again (p82)

Spot That List (p83)

Find the Page (p84)

INTERSECTING LISTS

Topics in this module continue to build from simple to more complex. This topic introduces an intersecting list by reviewing the information on simple and combined lists and reinforcing the patterns used to access lists of any type.

Strategies for Instruction

- Review the basics of lists:
    - A group of items with common characteristics.
    - Are found in nearly all documentation.
    - A simple list consists of a label plus related items.
    - A combined list is a simple list with additional descriptive column or columns.
    - All lists are meant to organize and locate information.

- Explain that lists may be more complex, depending on the information that needs to be organized.

- Introduce intersecting list. Explain that an intersecting list is in fact a combination of three separate lists. One list is read vertically, the second list is read horizontally. Information from the third and largest list can only be obtained at the intersection point of one item from each of the other lists. Use the *Metric Distance Chart (page 74)*, *Chain Slings (page 75)* and *Tip Table (page 76) to demonstrate the intersecting list.*

- Emphasize the following:
    - An intersecting list organizes three or more simple lists.
    - The term 'intersecting' comes from the strategy used to find information. The information is located at the intersection of a row and a column.
    - Two lists are search lists, used to quickly identify information in the third list.
    - Two pieces of information are needed to find the third piece.
    - The list is not meant to be read in its entirety. No matter the size or complexity of the intersecting list, information needed can be found quickly.

Supporting Documents

Metric Distance Chart (page 74)

Chain Slings (page 75)

Tip Table (page 76)

- Review the steps in gaining information from a more complex list:
    - Check the title.
    - Read the column labels.
    - Scan for the columns and rows needed.
    - Trace the point of intersection (for an intersecting list).
    - Record the information.

- Reinforce that lists typically flow top to bottom and left to right. Caution against reading the entire list piece by piece. Encourage the use of labels, columns, and rows to source the needed information.

Activities

How Heavy?

Learner Worksheet (page 85)
This worksheet includes an example of an intersecting list, the Chain Slings, and the following assignment: [Answers in brackets]

1. What is the maximum safe working load for a Single Choker Hitch made of 1-inch chain? [28,620]

2. Your load is 19,000 pounds. If you have a 1/2-inch chain, what type of hitch must you use? [Single Basket Hitch (vertical legs)]

Reinforce how an intersected list will quickly yield needed information.

Bonus Time

Learner Worksheet (page 86)
This worksheet includes the Tip Table intersecting list and the following assignment: [Answers in brackets]

1. You are to receive a 20% bonus, or tip, for every job well done. What would your tip be on a job worth $110? [$22.00]

2. What would your 20% bonus be on a $230 job? [$46.00]

Activity Worksheets

worksheet (p85)

worksheet (p86)

NESTED LISTS

This topic introduces a nested list by reviewing the information on simple and combined lists and reinforcing that a nested list is a combined list within a list. Reviewing past instruction on lists can help in the introduction and comprehension of each new pattern.

Strategies for Instruction

- Review the basics of lists:
    - A group of items with common characteristics.
    - Are found in nearly all documentation.
    - Simple list consists of a label on a series of related items.
    - A combined list is a simple list with additional descriptive columns.
    - An intersecting list consists of three lists, a horizontal list, a vertical list and a third list of information at each intersecting point.
    - All lists meant to organize and locate information.

- Reinforce that lists can be complex, depending on the information that needs to be organized.

- Introduce nested list. Explain that a nested list is a combined list with added detail. In a nested list, one or more columns or rows are subdivided to give an additional layer of information. Use the *Time Card (page 77)*, *Room Finish Schedule (page 78)*, and *Hot Water Heating Costs (page 79)* to emphasize the following points.
    - A proper nested list retains properties of simple and combined lists.
    - A nested list can be spotted by a secondary label that repeats (for example, the days of the week in the time card that repeat for both Reg. and O/T columns, the floor label in the Room Finish Schedule that repeats for the four elements beneath).
    - A nested list can be found within a combined list or an intersected list.
    - The list is not meant to be read in its entirety. No matter the size or complexity of the nested list, information can be found quickly by using column headings.
    - There is need for care as multiple column headings can be confusing.

Supporting Documents

Time Card (page 77)

Room Schedule (page 78)

Heating Costs (page 79)

- Review the steps for finding information from a complex list:
    - Check the title.
    - Read the column and row labels.
    - Find the selected item from the column and row.
    - Locate the intersection point between the selected items.
    - Record the information from the intersection point.

- Reinforce that lists typically flow top to bottom and left to right. Caution against reading the entire list piece by piece; encourage use of labels, columns, and rows to go directly to the needed information.

Activities

Create a Time Card

Learner Worksheet (page 87); Instructor Key (page 88)

This activity illustrates the ability of nested lists to replace two or more lists that are nearly the same. The Learner Worksheet includes a copy of the Time Card, and the following assignment:

1. Review the Time Card.
2. Draw a new time card for regular (Reg) time only.
3. Draw a new time card for overtime (O/T) only.
4. Compare your two new cards to the original card. Which is faster to fill out? Which is more efficient?

Expand That List

Instructor Key (page 89)

This activity builds upon Label It and Label That List Again from the previous topics.
Ask learners to examine their Label That List worksheet. Point out that they have a column of trade-specific examples. Have them add a column of common examples.

Discuss the options: two nearly identical combined lists, or a nested list, as shown in the Instructor Key. Point out that while a nested list may look complex, it can actually make the location and sequencing of information more convenient.

Activity Worksheets

Time Card: Learner(p87)

Time Card: Instructor (p88)

Expand That List (p89)

ADDITIONAL LEARNING ACTIVITIES

Building Blocks

Have learners list the steps they have taken to earn their trade designation, including the steps that have brought them to this class.

NOTE: This exercise is built upon in *Module 5: Process Charts.*

Reporting an Incident

Learner Worksheet (page 90)

Have learners list the main categories of information.

NOTE: this exercise is built upon in *Module 6: Entry Forms*

Trip Expenses

Learner Worksheet (page 91)

This activity reinforces the use of an intersecting list. The worksheet uses a metric distance chart listing distances in kilometers and asks the following questions [answers in brackets]:

1. You have travelled from Halifax to Moncton to conduct a workplace inspection. Using the metric distance chart, what distance did you travel in kilometres? [295 km]
2. You get $0.50 per km for travel expenses. You fill out your form once you are back in Halifax. How much are you owed for this trip? [295 km x 2 for round trip = 590 km; 590 x $0.50 = $295.00]
3. How much would you be owed in travel expenses if you travelled from Fredericton to Saint John and back? [103 km x 2 = 206 km round trip; 206 x $0.50 = $103.00]

Activity Worksheets

Reporting an Incident (p90)

Trip Expenses (p91)

Heating Costs Comparison

Learner Worksheet (page 92)

This activity provides practice in the use of a nested list. The worksheet includes a hot water heating chart and the following questions [answers in brackets]:

1. For a family of four using an old electric water heater, what is the annual cost for hot water? [$491]
2. If this family wants to replace its old electric water heater, what is the cheapest option for them? [Electricity – Time of use]
3. What is this family's most expensive option? [Propane stand alone water heater]
4. If this family replaces its old electric water heater with an oil stand alone water heater, how much money will be saved annually? [$491 - $416 = $75]

Activity Worksheets

worksheet (p92)

Document Use
Refresher
For Apprentices

SUPPORTING DOCUMENTS

Module 2

Appendix 2A

TIPS FOR FILLING OUT FORMS

Tips for Filling Out Forms

- Take your time
- Ask for help
- Follow directions exactly
- Think before you write
- Print neatly
- Fill in all necessary blanks
- Be truthful
- Review your finished form
- Sign the form

PAINT COLOURS

Example 1

Here are the paint colours and faucets available for your bathroom: Colour # 1415, Soft Jade; Color # 1416, Garden Moss; and Color #1417, Forest Glen. All are available in semi-gloss or eggshell finish. There are also three faucet sets: the Meridian (single handle) $109.88; the Mermaid (dual handles) $83.50; and the Monitor (dual handles) $95.75. All are available in polished brass or polished chrome. I've included paint samples and photos of the faucets. Please tell me your choices by Friday. If you have any questions, call me at 703-555-1212.

Example 2

Here are the paint colours and faucets available for your bathroom (paint samples and photos are enclosed). Please tell me your choices by Friday. If you have any questions, call me at 703-555-1212.

Paint Colors (Available in semi-gloss or eggshell finish)

- # 1415 Soft Jade
- # 1416 Garden Moss
- # 1417 Forest Glen

Faucet Sets (Available in polished brass or polished chrome)

Model	Price	Handle Style
• Meridian	$109.88	Single
• Mermaid	83.50	Dual
• Monitor	95.75	Dual

OCCUPATIONAL HEALTH AND SAFETY REGULATION: Fall Protection

GENERAL REQUIREMENTS

Obligation to use fall protection

11.2 (1) Unless elsewhere provided for in this Regulation, an employer must ensure that a fall protection system is used when work is being done at a place (a) from which a fall of 3 m (10 ft) or more may occur, or (b) where a fall from a lesser height involves an unusual risk of injury.

(2) The employer must ensure that guardrails meeting the requirements of Part 4 (General Conditions) or other similar means of fall restraint are used when practicable.

(3) If the use of guardrails or similar means of fall restraint is not practicable, the employer must ensure that another fall restraint system is used.

(4) If the use of a fall restraint system is not practicable, the employer must ensure that a fall arrest system is used.

(5) If the use of a fall arrest system is not practicable or will result in a hazard greater than if the system was not used, the employer must ensure that

- (a) a control zone is used in accordance with this Part,
- (b) a safety monitor system with a control zone is used in accordance with this Part, or
- (c) other procedures acceptable to the board are followed.

Fall protection plan

11.3 (1) The employer must have a written fall protection plan for a workplace if

- (a) work is being done at a location where workers are not protected by permanent guardrails, and from which a fall of 7.5 m (25 ft) or more may occur,
- (b) the employer uses a safety monitor and control zone or other work procedures as the means of fall protection, or
- (c) the board so directs, because a fall may involve an unusual risk of injury.

(2) The fall protection plan must be available at the workplace before work with a risk of falling begins.

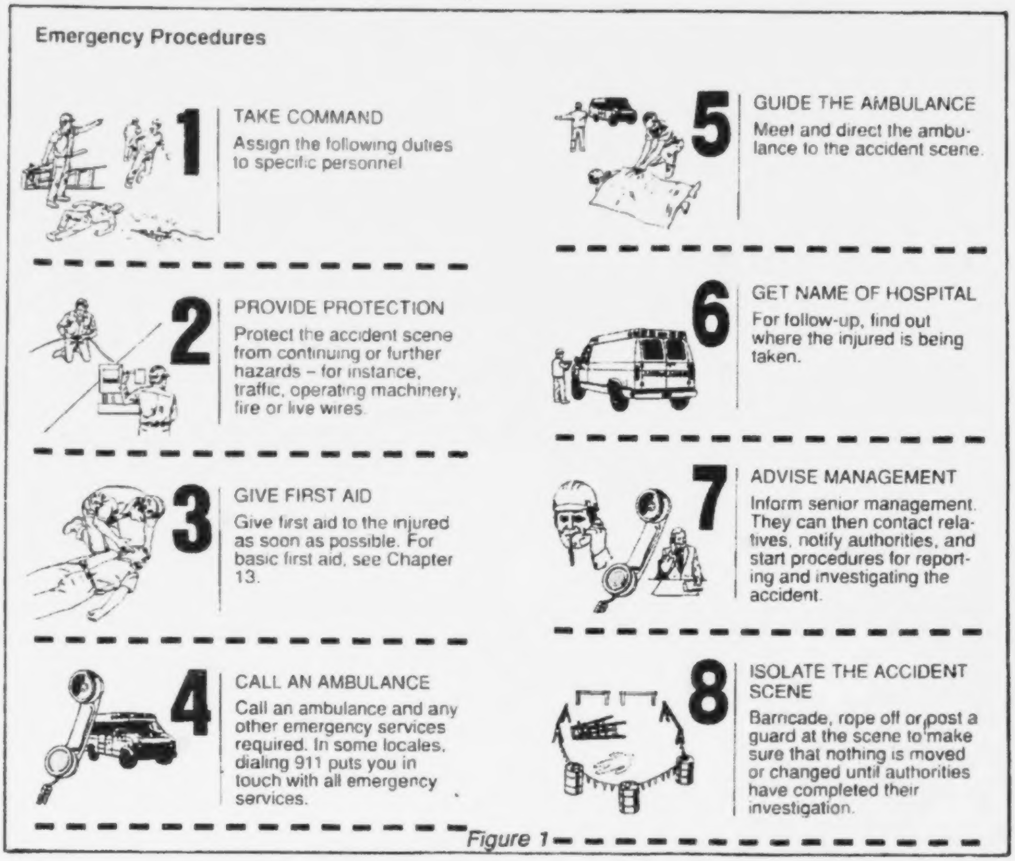
(3) The plan must specify

- (a) the fall hazards expected in each work area,
- (b) the fall protection system or systems to be used in each area,
- (c) the procedures to assemble, maintain, inspect, use and disassemble the fall protection system or systems, and
- (d) the procedures for rescue of a worker who has fallen and is suspended by a personal fall protection system or safety net, but is unable to effect self rescue.

Instruction of workers

11.4 Before a worker is allowed into an area where a risk of falling exists, the employer must ensure the worker is instructed in the fall protection system for the area and the procedures to be followed.

EMERGENCY PROCEDURES



Emergency Procedures

1 TAKE COMMAND

Assign the following duties to specific personnel

2 PROVIDE PROTECTION

Protect the accident scene from continuing or further hazards – for instance, traffic, operating machinery, fire or live wires.

3 GIVE FIRST AID

Give first aid to the injured as soon as possible. For basic first aid, see Chapter 13.

4 CALL AN AMBULANCE

Call an ambulance and any other emergency services required. In some locales, dialing 911 puts you in touch with all emergency services.

5 GUIDE THE AMBULANCE

Meet and direct the ambulance to the accident scene.

6 GET NAME OF HOSPITAL

For follow-up, find out where the injured is being taken.

7 ADVISE MANAGEMENT

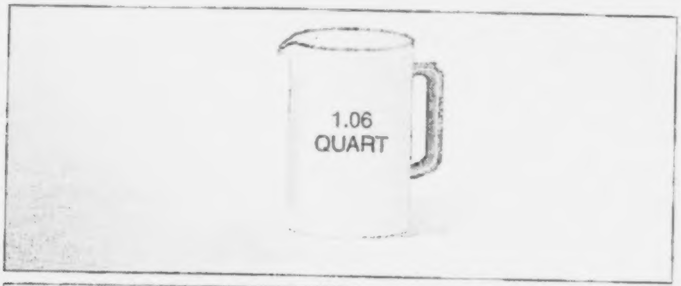
Inform senior management. They can then contact relatives, notify authorities, and start procedures for reporting and investigating the accident.

8 ISOLATE THE ACCIDENT SCENE

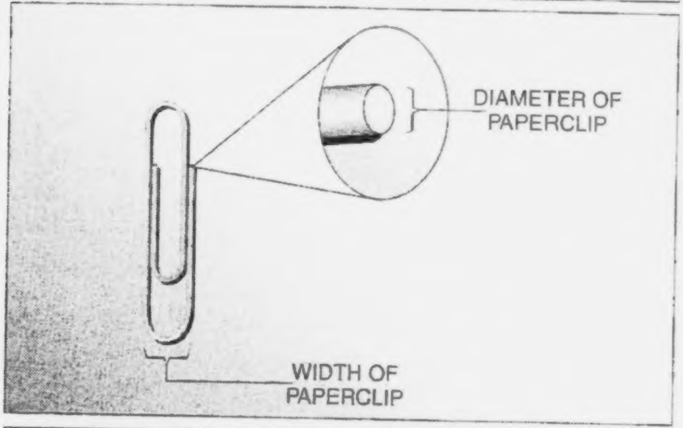
Barricade, rope off or post a guard at the scene to make sure that nothing is moved or changed until authorities have completed their investigation.

Figure 1

VISUAL METRIC CONVERSION

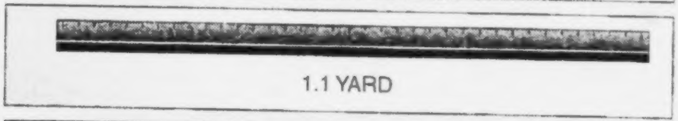


= 1 LITRE

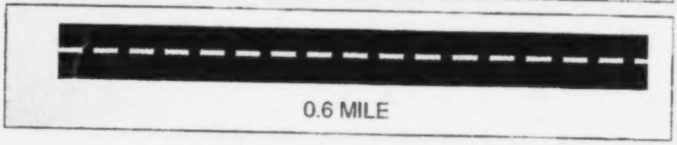

DIAMETER OF PAPERCLIP
WIDTH OF PAPERCLIP

= 1 MILLIMETRE

= 1 CENTIMETRE



= 1 METRE



= 1 KILOMETRE

CONVERSION FACTORS

APPENDIX 2A

CONVERSION FACTORS

Length

1 inch (in)	= 0.0833 ft	= 0.0278 yd	= 25.4 mm	= 2.54 cm
1 foot (ft)	= 12 in	= 0.333 yd	= 30.48 cm	= 0.3048 m
1 yard (yd)	= 36 in	= 3 ft	= 91.44 cm	= 0.9144 m
1 mile	= 5280 ft	= 1760 yd	= 1.6093 km	= 1609 m
1 millimeter (mm)	= 0.0394 in			
1 centimeter (cm)	= 10 mm	= 0.3937 in		
1 meter	= 100 cm	= 39.3696 in	= 3.2808 ft	= 1.0936 yd
1 kilometer (km)	= 1000 m	= 3281 ft	= 1093.61 yd	= 0.62137 mile

Area

1 in^2	= 0.00694 ft^2	= 0.00077 yd^2	= 6.452 cm^2	
1 ft^2	= 144 in^2	= 0.111 yd^2	= 929 cm^2	= 0.0929 m^2
1 yd^2	= 1296 in^2	= 9 ft^2	= 8361 cm^2	= 0.8361 m^2
1 acre	= 43,560 ft^2	= 4840 yd^2	= 0.00156 mile^2	= 4046.86 m^2
1 mile^2	= 3,097,600 yd^2	= 640 acre^2	= 2.59 km^2	
1 cm^2	= 100 mm^2	= 0.1550 in^2		
1 m^2	= 10,000 cm^2	= 1549 in^2	= 10.76 ft^2	= 1.1960 yd^2

Volume/Capacity

1 U.S. Gal	= 8 U.S. liq pts	= 231 in^3	= 0.1337 ft^3	= 0.003785 m^3	= 3.785 litres
1 Imp Gal	= 277.4 in^3	= 0.1605 ft^3	= 0.004546 m^3	= 4.546 litres	
1 ft^3	= 7.4805 U.S. gal	= 6.23 Imp gal	= 1728 in^3	= 28.32 litres	= 0.0283 m^3
1 yd^3	= 27 ft^3	= 0.7646 m^3			
1 acre ft	= 325,829 U.S. gal	= 271,335 Imp gal	= 43,560 ft^3	= 1233.5 m^3	
1 m^3	= 264.2 U.S. gal	= 220 Imp gal	= 61.023 in^3	= 35.314 ft^3	= 1000 litres
1 liter (l)	= 0.2642 U.S. gal	= 0.220 Imp gal	= .061023 in^3	= 0.0353 ft^3	

Flow

1 m^3 per min	= 264.2 U.S. gpm	
1 liter per sec	= 15.85 U.S. gpm	
1 ft^3 per sec	= 449 U.S. gpm	
1 million gpd	= 695 U.S. gpm	= 1.5475 cfs
1 acre ft per day	= 227 U.S. gpm	
1 m^3/hr	= 4.403 U.S oom	
1 British Imp. gpm	= 1.20095 U.S. gpm	

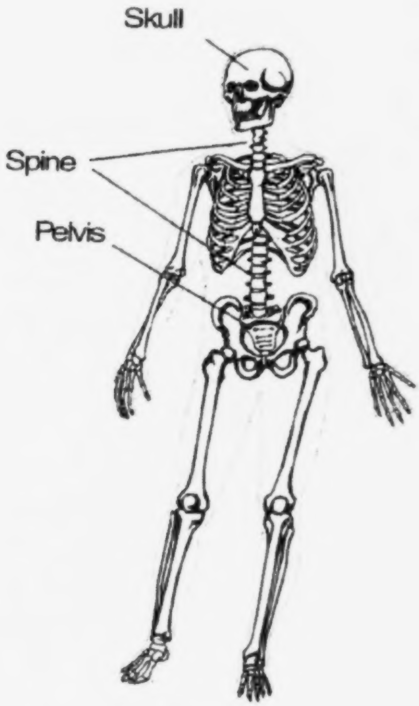
Conversion Tables

Known Unit	**Multiply By...**	**To Get...**
Centimetre (cm)	**10**	Millimetres (mm)
Inches (in)	**2.54**	Centimetres
Centimetres (cm)	0.393700	Inches
Feet	**0.3048**	Metres
Metres (m)	3.28084	Feet
Feet	**12**	Inches
Metre	**100**	Centimetres
Yards (yds)	**0.9144**	Metres
Metres	1.093613	Yards
Yard	**3**	Feet
Miles	1.60934	Kilometres
Kilometres (km)	0.621371	Miles
Mile	**1760**	Yards
Kilometre (km)	**1000**	Metres (m)

From Diagram to List

A diagram is a picture layered with a list.

The diagram:	The list:
Parts of Skeleton	Parts of Skeleton



Full skeleton

Skull
Spine
Pelvis

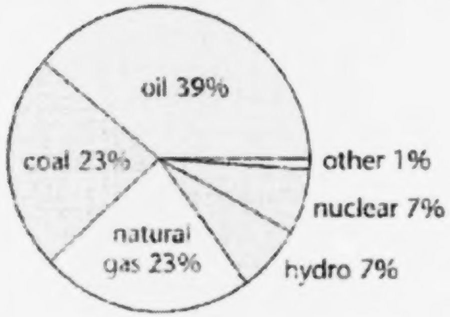
FROM GRAPH TO LIST

From Graph to List

A graph turns a written list into a visual representation.

The graph:

Energy Sources for North America in 1988



The list:

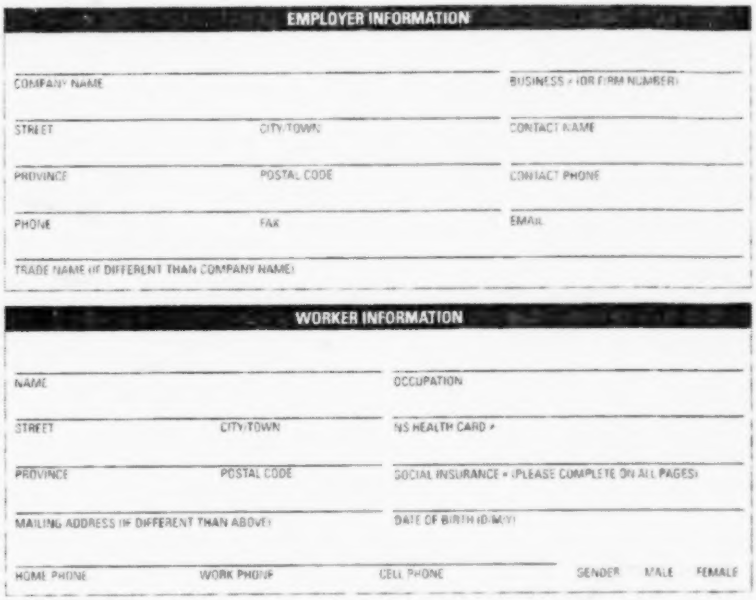
Energy Sources for North America in 1988	Amount
Oil	39%
Coal	23%
Natural Gas	23%
Hydro	7%
Nuclear	7%
Other	1%

FROM ENTRY FORM TO LIST

From Entry Form to List

An entry form is a series of lists requiring and providing information.

The entry form:



EMPLOYER INFORMATION

COMPANY NAME

BUSINESS # (OR FIRM NUMBER)

STREET

CITY/TOWN

CONTACT NAME

PROVINCE

POSTAL CODE

CONTACT PHONE

PHONE

FAX

EMAIL

TRADE NAME (IF DIFFERENT THAN COMPANY NAME)

WORKER INFORMATION

NAME

OCCUPATION

STREET

CITY/TOWN

NS HEALTH CARD #

PROVINCE

POSTAL CODE

SOCIAL INSURANCE # (PLEASE COMPLETE ON ALL PAGES)

MAILING ADDRESS (IF DIFFERENT THAN ABOVE)

DATE OF BIRTH (D/M/Y)

HOME PHONE

WORK PHONE

CELL PHONE

GENDER

MALE

FEMALE

The lists:

From the main list comes related lists, such as:

Entry form

Employer Information
Worker Information
Declaration and Consent

Employer Information

Company name
Street
City/Town
Province
Postal Code
Phone
Fax
Trade name
Business #
Contact name
Contact phone
Email

Worker Information

Name
Street
City/Town
Province
Postal Code
Mailing Address
Home Phone
Work Phone
Cell Phone
Occupation
NS Health Card #
Social Insurance #
Date of Birth
Gender

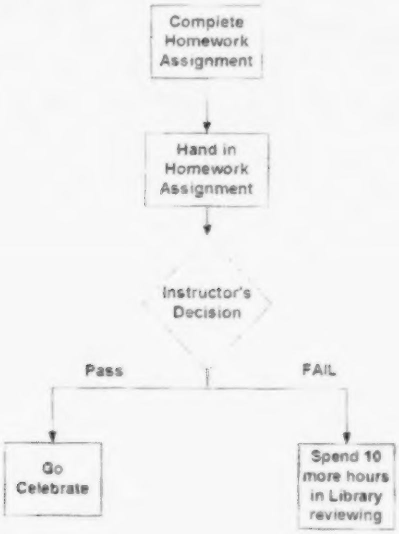
FROM PROCESS CHART TO LIST

From Process Chart to List

A process chart is a series of icons layered with one or more lists.

The process chart:

Flow of Homework


Complete Homework Assignment
Hand in Homework Assignment
Instructor's Decision
Pass
FAIL
Go Celebrate
Spend 10 more hours in Library reviewing

The list:

Flow of Homework

Complete Homework Assignment
Hand in Homework Assignment
Instructor's Decision

BOILING POINT OF ALKANES

Table 1. BOILING POINTS OF ALKANES

Formula	Name	Boiling Point C	Normal State at Room Temp. +20C
CH_4	Methane	-161	gas
CH_3CH_3	Ethane	- 89	
$CH_3CH_2CH_3$	Propane	- 42	
$CH_3CH_2CH_2CH_3$	Butane	-0.5	
$CH_3CH_2CH_2CH_2CH_3$	Pentane	+ 36	liquid
$CH_3(CH_2)_6CH_3$	Octane	+125	

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METRIC DISTANCE CHART

APPENDIX 2A

METRIC DISTANCES/DISTANCES METRIQUES

•DISTANCES VIA FERRY •DISTANCES PAR TRAVERSIER	BATHURST	CAMPBELLTON	C. TORMENTINE	EDMUNDSTON	FREDERICTON	GRAND FALLS	MONCTON	NEWCASTLE	SACKVILLE	SAINT JOHN	ST. STEPHEN	SUSSEX	WOODSTOCK
ALMA	301	410	206	450	181	398	89	223	144	141	251	62	277
BANGOR	525	501	527	366	276	325	439	497	488	291	158	367	213
BATHURST		114	264	300	248	287	209	79	249	361	363	283	347
BOSTON	912	893	927	740	666	713	832	834	875	699	542	755	594
CAMPBELLTON	114		361	190	357	180	319	188	357	460	454	393	289
C. TORMENTINE	263	361		467	273	489	96	200	62	256	366	182	372
CARAQUET	68	179	304	365	286	359	245	119	288	417	412	332	389
CHARLO	83	28	395	222	329	204	283	160	333	432	444	371	316
CHARLOTTETOWN	•327	•438	•63	•629	•344	•566	•158	•264	•124	•320	•426	•235	•447
CHATHAM	72	182	192	275	178	219	137	8	178	281	293	203	277
DALHOUSIE	91	23	353	216	337	199	298	168	349	440	452	364	313
EDMUNDSTON	300	190	463		270	64	459	267	509	373	332	387	173
FREDERICTON	248	357	273	270		217	185	169	226	103	115	117	93
HALIFAX	499	610	290	•631	•346	•568	295	420	251	•237	•351	•322	•449
HOULTON	369	319	404	184	122	138	309	290	352	232	150	259	19
MONCTON	209	319	96	458	185	391		133	42	168	275	88	287
MONTREAL	896	753	1147	547	832	610	1049	818	987	941	898	969	729
NEWCASTLE	79	188	200	267	169	211	131		170	272	284	193	268
NEW YORK	1308	1241	1275	1088	1062	1061	1180	1230	1223	1017	890	1102	941
PORTLAND	739	719	753	566	492	539	659	660	702	496	369	581	420
QUÉBEC	613	502	795	304	589	367	810	575	744	698	655	726	486
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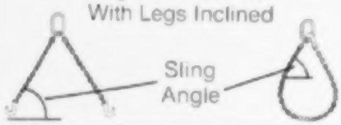
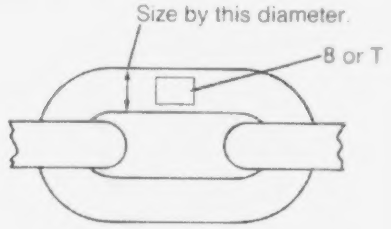
ST. LEONARD	264	153	430	37	233	20	422	230	472	336	295	350	136
ST. STEPHEN	363	454	366	332	115	283	275	284	316	110		187	165
SUSSEX	267	393	182	387	117	397	88	193	134	79	187		216
TORONTO	1403	1292	1577	1086	1371	1149	1482	1357	1526	1481	1437	1508	1268
TRURO	399	510	190	591	381	528	195	320	151	357	463	272	484
WOODSTOCK	347	289	390	173	93	118	287	268	333	202	165	216	
YARMOUTH	•460	•402	•362	•499	•214	•436	•267	•381	•311	•105	•219	•190	•317

CHAIN SLING

GRADE T (8) ALLOY STEEL

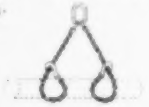
MAXIMUM SAFE WORKING LOADS — POUNDS
Safety Factor = 5 per OH&S Regulations

Chain Size (Inches)	Single Vertical Hitch	Single Choker Hitch	Single Basket Hitch (Vertical Legs)	2-Leg Bridle Hitch & Single Basket Hitch With Legs Inclined  Sling Angle		
				60°	45°	30°
¼	2,800	2,100	5,600	4,850	3,959	2,800
⅜	5,680	4,260	11,360	9,838	8,032	5,680
½	9,600	7,200	19,200	16,627	13,574	9,600
⅝	14,480	10,860	28,960	25,079	20,475	14,480
¾	22,640	16,980	45,280	39,212	32,013	22,640
⅞	27,360	20,520	54,720	47,388	38,687	27,360
1	38,160	28,620	76,320	66,093	53,958	38,160
1¼	57,840	43,380	115,680	100,179	81,786	57,840

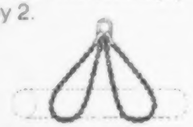


Use only alloy steel chain. Links will be stamped with 8 or T.

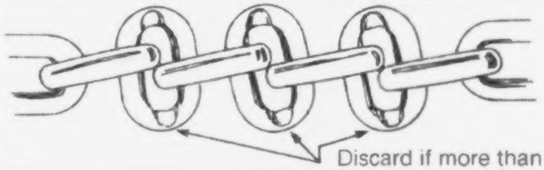
If used with Choker Hitch multiply above values by ¾.



For Double Basket Hitch multiply above values by 2.



Strength based on ISO Standards and adjusted to reflect a safety factor of 5.



Discard if more than 10% wear at bearing surfaces.

Tip Table

Bill	Dollar Tip at a Given Tip Percentage						
	10%	15%	16%	17%	18%	19%	20%
$10	1.00	1.50	1.60	1.70	1.80	1.90	2.00
$15	1.50	2.25	2.40	2.55	2.70	2.85	3.00
$20	2.00	3.00	3.20	3.40	3.60	3.80	4.00
$25	2.50	3.75	4.00	4.25	4.50	4.75	5.00
$30	3.00	4.50	4.80	5.10	5.40	5.70	6.00
$35	3.50	5.25	5.60	5.95	6.30	6.65	7.00
$40	4.00	6.00	6.40	6.80	7.20	7.60	8.00
$45	4.50	6.75	7.20	7.65	8.10	8.55	9.00
$50	5.00	7.50	8.00	8.50	9.00	9.50	10.00
$55	5.50	8.25	8.80	9.35	9.90	10.45	11.00
$60	6.00	9.00	9.60	10.20	10.80	11.40	12.00
$65	6.50	9.75	10.40	11.05	11.70	12.35	13.00
$70	7.00	10.50	11.20	11.90	12.60	13.30	14.00
$75	7.50	11.25	12.00	12.75	13.50	14.25	15.00
$80	8.00	12.00	12.80	13.60	14.40	15.20	16.00
$85	8.50	12.75	13.60	14.45	15.30	16.15	17.00
$90	9.00	13.50	14.40	15.30	16.20	17.10	18.00
$95	9.50	14.25	15.20	16.15	17.10	18.05	19.00
$100	10.00	15.00	16.00	17.00	18.00	19.00	20.00
$110	11.00	16.50	17.60	18.70	19.80	20.90	22.00
$120	12.00	18.00	19.20	20.40	21.60	22.80	24.00
$130	13.00	19.50	20.80	22.10	23.40	24.70	26.00
$140	14.00	21.00	22.40	23.80	25.20	26.60	28.00
$150	15.00	22.50	24.00	25.50	27.00	28.50	30.00
$160	16.00	24.00	25.60	27.20	28.80	30.40	32.00
$170	17.00	25.50	27.20	28.90	30.60	32.30	34.00
$180	18.00	27.00	28.80	30.60	32.40	34.20	36.00
$190	19.00	28.50	30.40	32.30	34.20	36.10	38.00
$200	20.00	30.00	32.00	34.00	36.00	38.00	40.00
$230	23.00	34.50	36.80	39.10	41.40	43.70	46.00
$250	25.00	37.50	40.00	42.50	45.00	47.50	50.00
$280	28.00	42.00	44.80	47.60	50.40	53.20	56.00
$300	30.00	45.00	48.00	51.00	54.00	57.00	60.00

TIME CARD

LABOR DISTRIBUTION

Job Number	Cost Code	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Total	
		Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T

ROOM FINISH SCHEDULE

ROOM FINISH SCHEDULE

ROOMS	FLOOR				CEILING				WALL				BASE				TRIM			REMARKS
	CARPET	CERAMIC TILE	RUBBER TILE	CONCRETE	ACOUSTIC TILE	DRYWALL	PAINT	CERAMIC TILE	DRYWALL	PAINT	WALLPAPER	CERAMIC TILE	WOOD	RUBBER	CERAMIC TILE	STAIN	WOOD	STAIN	PAINT	
ENTRY		✓			✓				✓	✓	✓		✓			✓	✓	✓		See owner for all painting
HALL	✓				✓				✓	✓			✓			✓	✓	✓		
BEDROOM 1	✓				✓				✓	✓	✓		✓			✓	✓	✓		See owner for grade of carpet
BEDROOM 2	✓				✓				✓	✓			✓			✓	✓	✓		See owner for grade of carpet
BEDROOM 3	✓				✓				✓	✓			✓			✓	✓	✓		See owner for grade of carpet
BATH 1	✓	✓			✓			✓	✓	✓	✓	✓	✓			✓	✓	✓		Wallpaper 3 walls around vanity
BATH 2		✓			✓			✓	✓	✓	✓	✓			✓		✓	✓		Water-seal tile Wallpaper w/wall
UTIL + CLOSETS	✓		✓			✓	✓		✓	✓			✓			✓	✓	✓	✓	Use off-white flat latex
KITCHEN			✓		✓				✓	✓				✓			✓	✓		
DINING	✓				✓				✓	✓	✓		✓			✓	✓	✓		
LIVING	✓				✓				✓	✓			✓			✓	✓	✓		See owner for grade of carpet
GARAGE				✓		✓	✓					✓		✓			✓	✓		

HOT WATER HEATING COSTS

Domestic Hot Water Heating Cost Comparisons - October 2003

Fuel and Appliances		Average Seasonal Efficiency	Unit of Fuel	Cost Per Unit (HST Incl.)	$ per cubic metre of hot water (HST Incl.)	Typical household annual hot water		
						Two person (120 litres/day)	Four person (240 litres/day)	Six person (360 litres/day)
Electricity								
Electric water heater - new		90%	kilowatt-hour	9.9¢	5.30	$232	$465	$696
Electric water heater - old		85%		9.9¢	5.61	$246	$491	$737
Time of use (optional)* - new		90%		4.95¢	2.65	$116	$232	$347
Oil								
Stand alone water heater		55%	litre	58.0¢	4.75	$208	$416	$624
Tankless Coil	winter	75%		58.0¢	3.48	$280	$559	$839
	summer	25%		58.0¢	10.45			
Indirect tank (with cold start boiler)	winter	75%		58.0¢	3.48	$168	$336	$505
	summer	60%		58.0¢	4.34			
Propane								
Stand alone water heater		55%	litre	90.3¢	11.20	$490	$981	$1.471

Document Use Refresher For Apprentices

ACTIVITY WORKSHEETS

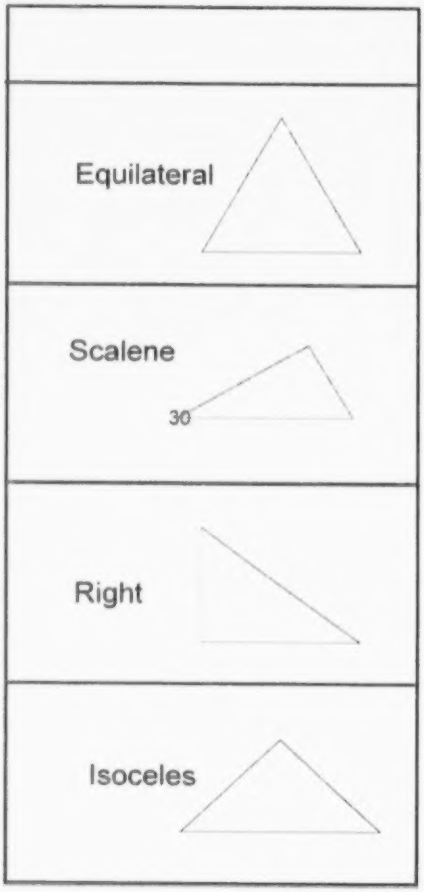
Module 2

Appendix 2B

LABEL IT

Learner Worksheet

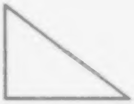
Label the picture list.


Equilateral
Scalene
30
Right
Isoceles

LABEL THAT LIST AGAIN

Learner Worksheet

Label the three lists.

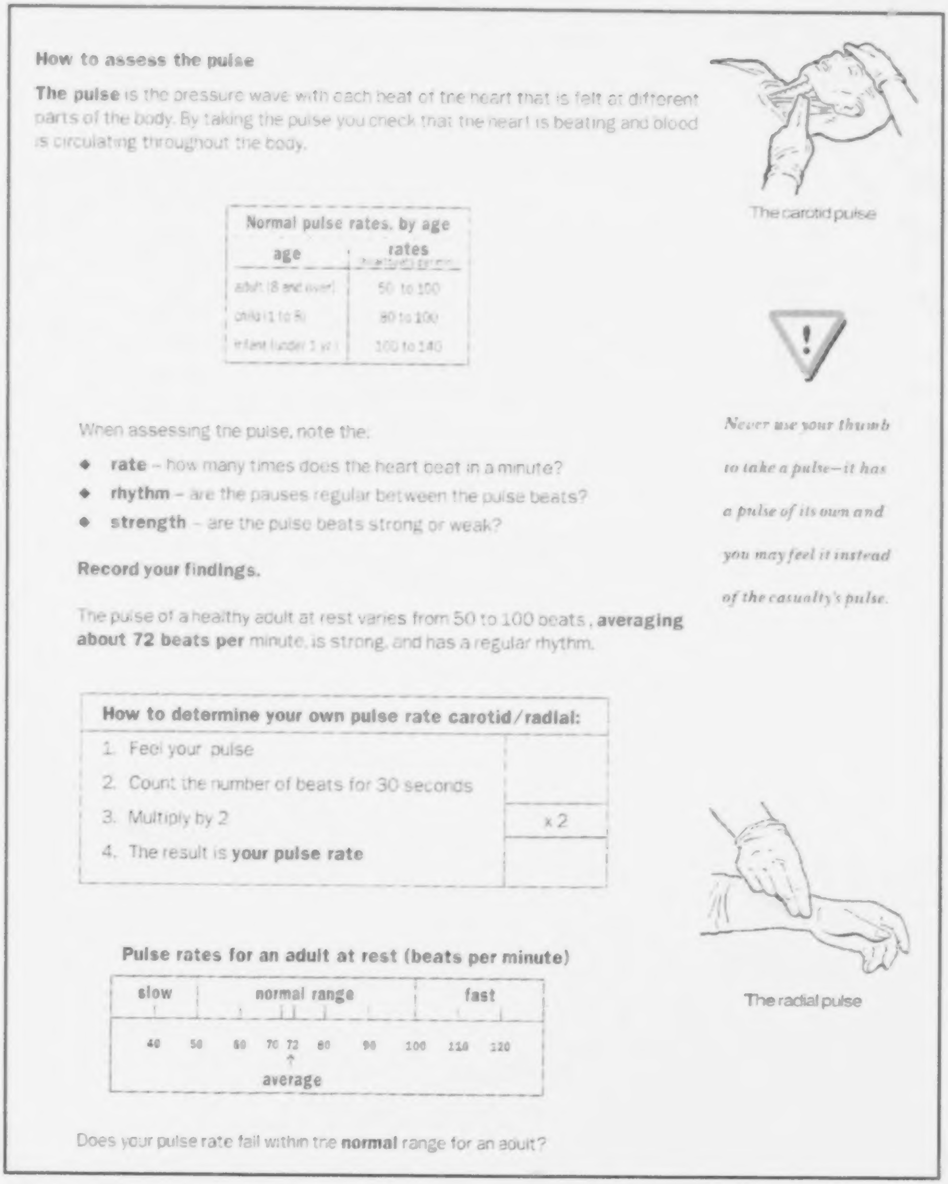
Equilateral	All the sides are equal and all the angles are equal	- trusses
Scalene	All angles and sides are different measures	
Right 	Any triangle with a 90 degree angle	- stringers - rafters
Isoceles	Two sides are equal and two angles have equal measure Opposite equal sides are equal angles	- gable roofs

SPOT THAT LIST

Learner Worksheet

Scan this page from a first aid manual and complete the following tasks:

1. Circle the lists.
2. How are these lists similar? How are they different?
3. Discuss your answers



How to assess the pulse

The pulse is the pressure wave with each beat of the heart that is felt at different parts of the body. By taking the pulse you check that the heart is beating and blood is circulating throughout the body.

The carotid pulse

Normal pulse rates, by age	
age	**rates** [illegible]
adult (8 and over)	50 to 100
child (1 to 8)	80 to 100
infant (under 1 yr)	100 to 140

Never use your thumb to take a pulse—it has a pulse of its own and you may feel it instead of the casualty's pulse.

When assessing the pulse, note the:

- **rate** – how many times does the heart beat in a minute?
- **rhythm** – are the pauses regular between the pulse beats?
- **strength** – are the pulse beats strong or weak?

Record your findings.

The pulse of a healthy adult at rest varies from 50 to 100 beats, **averaging about 72 beats per** minute, is strong, and has a regular rhythm.

How to determine your own pulse rate carotid/radial:	
1. Feel your pulse	
2. Count the number of beats for 30 seconds	
3. Multiply by 2	x 2
4. The result is **your pulse rate**	

The radial pulse

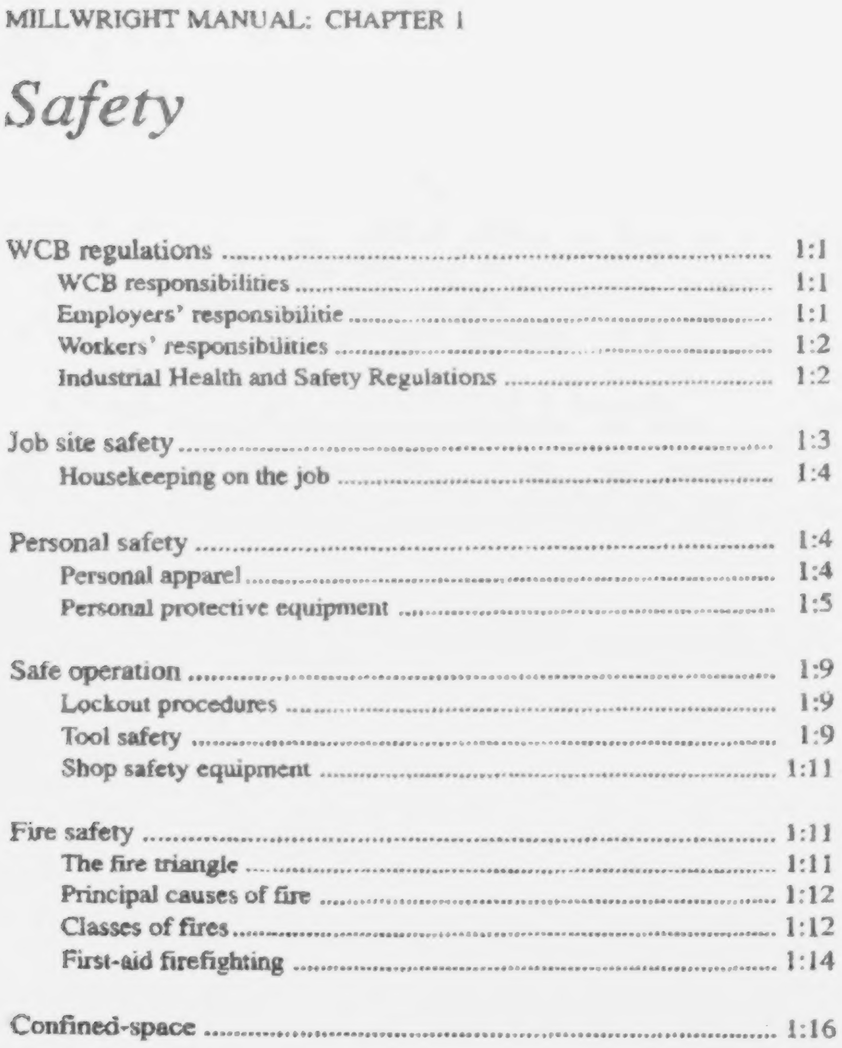
Pulse rates for an adult at rest (beats per minute)

Does your pulse rate fall within the **normal** range for an adult?

FIND THE PAGE
Learner Worksheet

Scan the sample Table of Contents and answer the following question:

1. What page does the 'Personal Protective Equipment' start on?



MILLWRIGHT MANUAL: CHAPTER 1

Safety

WCB regulations 1:1
    WCB responsibilities 1:1
    Employers' responsibilitie 1:1
    Workers' responsibilities 1:2
    Industrial Health and Safety Regulations 1:2

Job site safety 1:3
    Housekeeping on the job 1:4

Personal safety 1:4
    Personal apparel 1:4
    Personal protective equipment 1:5

Safe operation 1:9
    Lockout procedures 1:9
    Tool safety 1:9
    Shop safety equipment 1:11

Fire safety 1:11
    The fire triangle 1:11
    Principal causes of fire 1:12
    Classes of fires 1:12
    First-aid firefighting 1:14

Confined-space 1:16

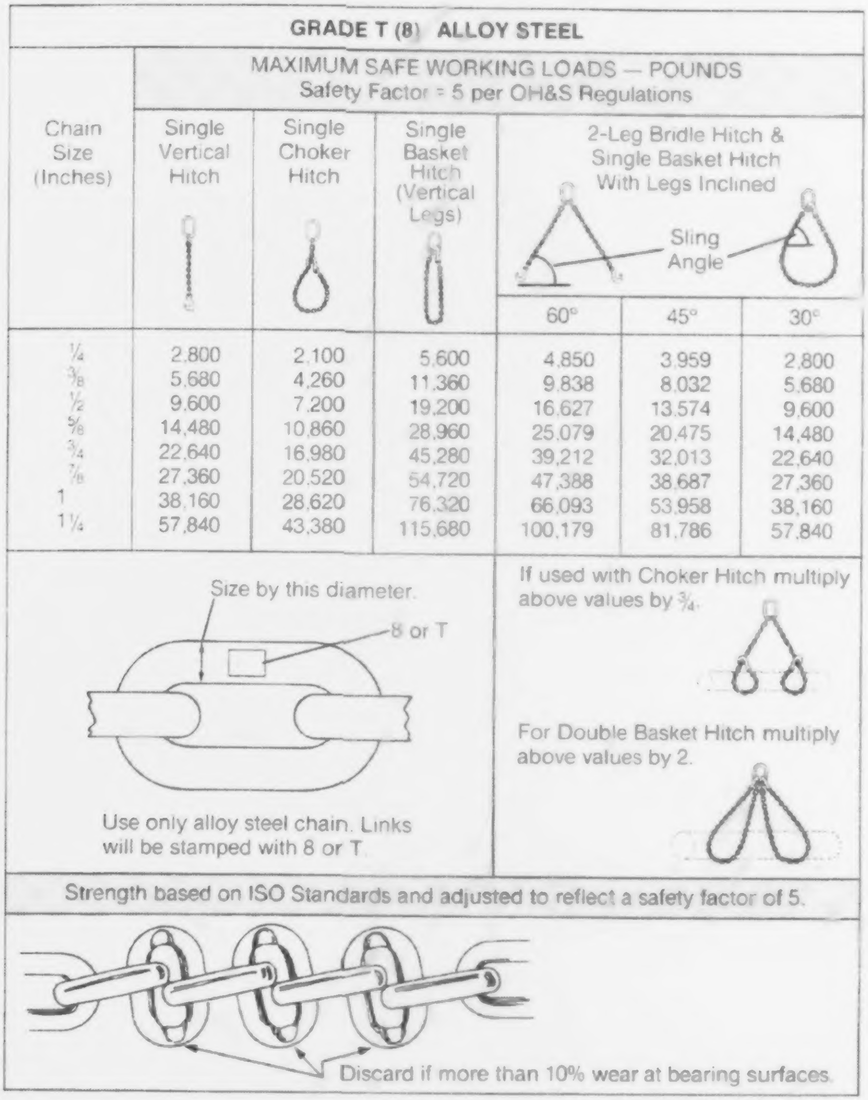
HOW HEAVY?

Learner Worksheet

Use the intersecting list Chain Slings, and answer the following questions:

1. What is the maximum safe working load for a Single Choker Hitch made of 1-inch chain?
2. Your load is 19,000 pounds. If you have a 1/2-inch chain, what type of hitch must you use?

CHAIN SLINGS



GRADE T (8) ALLOY STEEL

MAXIMUM SAFE WORKING LOADS — POUNDS
Safety Factor = 5 per OH&S Regulations

Chain Size (Inches)	Single Vertical Hitch	Single Choker Hitch	Single Basket Hitch (Vertical Legs)	2-Leg Bridle Hitch & Single Basket Hitch With Legs Inclined		
				60°	45°	30°
¼	2,800	2,100	5,600	4,850	3,959	2,800
⅜	5,680	4,260	11,360	9,838	8,032	5,680
½	9,600	7,200	19,200	16,627	13,574	9,600
⅝	14,480	10,860	28,960	25,079	20,475	14,480
¾	22,640	16,980	45,280	39,212	32,013	22,640
⅞	27,360	20,520	54,720	47,388	38,687	27,360
1	38,160	28,620	76,320	66,093	53,958	38,160
1¼	57,840	43,380	115,680	100,179	81,786	57,840

Use only alloy steel chain. Links will be stamped with 8 or T.

If used with Choker Hitch multiply above values by ¾.

For Double Basket Hitch multiply above values by 2.

Strength based on ISO Standards and adjusted to reflect a safety factor of 5.

Discard if more than 10% wear at bearing surfaces.

BONUS TIME
Learner Worksheet

Use the intersecting Tip Table to answer the following questions:

1. You are to receive a 20% bonus, or tip, for every job well done. What would your tip be on a job worth $110?
2. What would your 20% bonus be on a $230 job?

Tip Table

Bill	Dollar Tip at a Given Tip Percentage						
	10%	15%	16%	17%	18%	19%	20%
$10	1.00	1.50	1.60	1.70	1.80	1.90	2.00
$15	1.50	2.25	2.40	2.55	2.70	2.85	3.00
$20	2.00	3.00	3.20	3.40	3.60	3.80	4.00
$25	2.50	3.75	4.00	4.25	4.50	4.75	5.00
$30	3.00	4.50	4.80	5.10	5.40	5.70	6.00
$35	3.50	5.25	5.60	5.95	6.30	6.65	7.00
$40	4.00	6.00	6.40	6.80	7.20	7.60	8.00
$45	4.50	6.75	7.20	7.65	8.10	8.55	9.00
$50	5.00	7.50	8.00	8.50	9.00	9.50	10.00
$55	5.50	8.25	8.80	9.35	9.90	10.45	11.00
$60	6.00	9.00	9.60	10.20	10.80	11.40	12.00
$65	6.50	9.75	10.40	11.05	11.70	12.35	13.00
$70	7.00	10.50	11.20	11.90	12.60	13.30	14.00
$75	7.50	11.25	12.00	12.75	13.50	14.25	15.00
$80	8.00	12.00	12.80	13.60	14.40	15.20	16.00
$85	8.50	12.75	13.60	14.45	15.30	16.15	17.00
$90	9.00	13.50	14.40	15.30	16.20	17.10	18.00
$95	9.50	14.25	15.20	16.15	17.10	18.05	19.00
$100	10.00	15.00	16.00	17.00	18.00	19.00	20.00
$110	11.00	16.50	17.60	18.70	19.80	20.90	22.00
$120	12.00	18.00	19.20	20.40	21.60	22.80	24.00
$130	13.00	19.50	20.80	22.10	23.40	24.70	26.00
$140	14.00	21.00	22.40	23.80	25.20	26.60	28.00
$150	15.00	22.50	24.00	25.50	27.00	28.50	30.00
$160	16.00	24.00	25.60	27.20	28.80	30.40	32.00
$170	17.00	25.50	27.20	28.90	30.60	32.30	34.00
$180	18.00	27.00	28.80	30.60	32.40	34.20	36.00
$190	19.00	28.50	30.40	32.30	34.20	36.10	38.00
$200	20.00	30.00	32.00	34.00	36.00	38.00	40.00
$230	23.00	34.50	36.80	39.10	41.40	43.70	46.00
$250	25.00	37.50	40.00	42.50	45.00	47.50	50.00
$280	28.00	42.00	44.80	47.60	50.40	53.20	56.00
$300	30.00	45.00	48.00	51.00	54.00	57.00	60.00

CREATE A TIME CARD

Learners Worksheet

1. Review the Time Card
2. Draw a new time card for regular (Reg) time only
3. Draw a new time card for overtime (O/T) only
4. Compare your two new cards to the original card. Which is faster to fill out? Which is more efficient?

LABOUR DISTRIBUTION

Job Number	Cost Code	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Total	
		Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T

CREATE A TIME CARD

Instructor Key

In order to gather the same information without a nested list it is necessary to create two tables. The student should come up with something similar to the tables below.

Weekly Time Card- Regular Hours

Job Number	Cost Code	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total

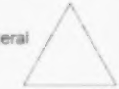
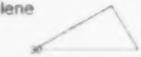
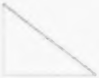
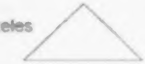
Weekly Time Card- Overtime Hours

Job Number	Cost Code	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total

EXPAND THAT LIST

Learner Worksheet

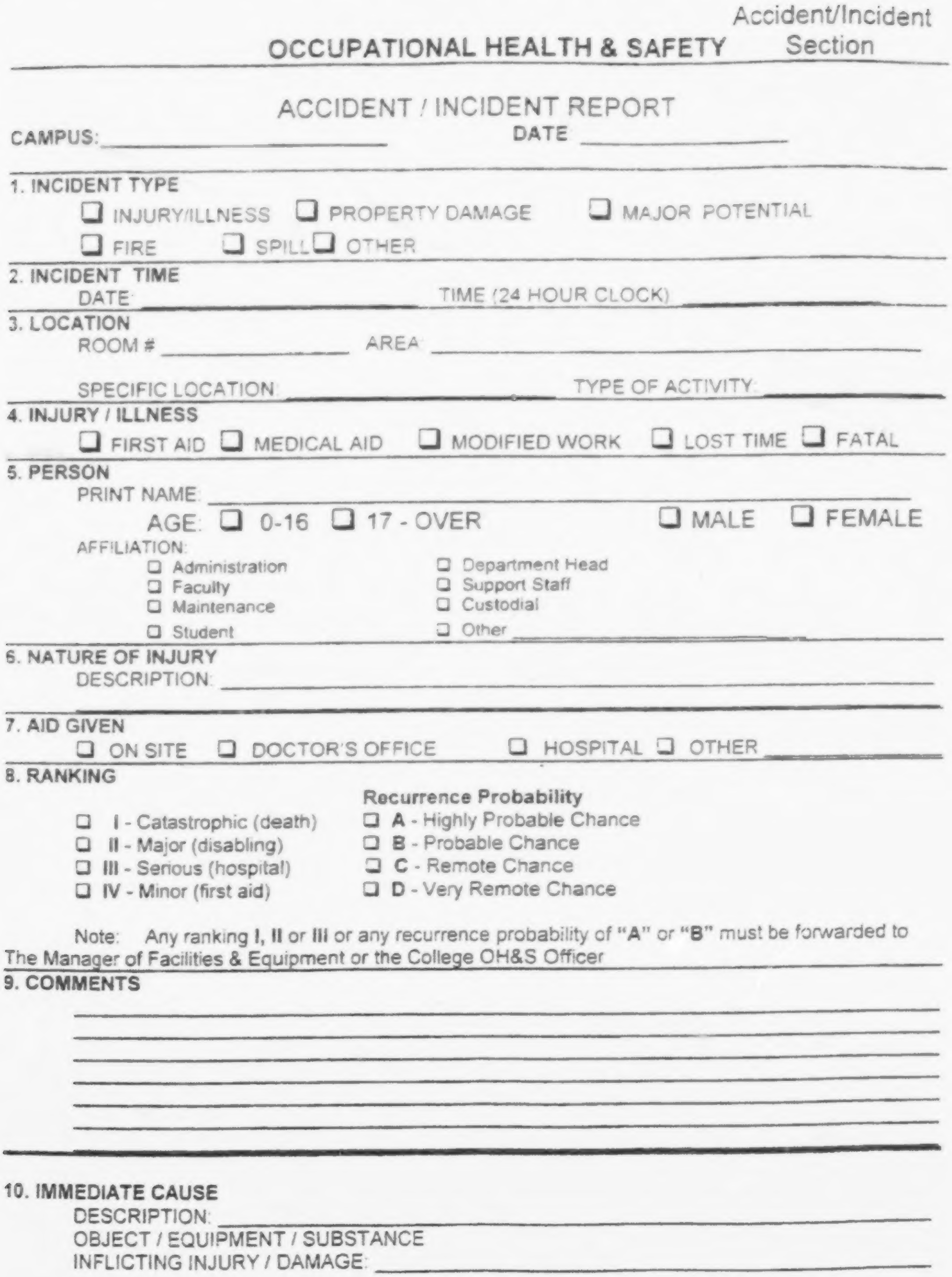
This activity builds upon Label It and Label That List from the previous topics. Examine your Label That List worksheet and add a column of common examples.

Triangles	Definition	Examples	
		Worksite Example	Common
Equilateral 	All the sides are equal and all the angles are equal	- trusses	- yield sign
Scalene 	All angles and sides are different measures		
Right 	Any triangle with a 90 degree angle	- stringers - rafters	
Isoceles 	2 sides are equal and two angles have equal measure Opposite equal sides are equal angles	- gable roofs	

REPORTING AN INCIDENT

Learner Worksheet

List the main categories of information.



Accident/Incident Section

OCCUPATIONAL HEALTH & SAFETY

ACCIDENT / INCIDENT REPORT

CAMPUS: ____________ DATE ____________

1. INCIDENT TYPE
☐ INJURY/ILLNESS ☐ PROPERTY DAMAGE ☐ MAJOR POTENTIAL
☐ FIRE ☐ SPILL ☐ OTHER

2. INCIDENT TIME
DATE: ____________ TIME (24 HOUR CLOCK) ____________

3. LOCATION
ROOM # ____________ AREA: ____________
SPECIFIC LOCATION: ____________ TYPE OF ACTIVITY: ____________

4. INJURY / ILLNESS
☐ FIRST AID ☐ MEDICAL AID ☐ MODIFIED WORK ☐ LOST TIME ☐ FATAL

5. PERSON
PRINT NAME: ____________
AGE: ☐ 0-16 ☐ 17 - OVER ☐ MALE ☐ FEMALE
AFFILIATION:
☐ Administration
☐ Faculty
☐ Maintenance
☐ Student
☐ Department Head
☐ Support Staff
☐ Custodial
☐ Other ____________

6. NATURE OF INJURY
DESCRIPTION: ____________

7. AID GIVEN
☐ ON SITE ☐ DOCTOR'S OFFICE ☐ HOSPITAL ☐ OTHER ____________

8. RANKING

☐ I - Catastrophic (death)
☐ II - Major (disabling)
☐ III - Serious (hospital)
☐ IV - Minor (first aid)

Recurrence Probability
☐ **A** - Highly Probable Chance
☐ **B** - Probable Chance
☐ **C** - Remote Chance
☐ **D** - Very Remote Chance

Note: Any ranking **I**, **II** or **III** or any recurrence probability of "**A**" or "**B**" must be forwarded to The Manager of Facilities & Equipment or the College OH&S Officer

9. COMMENTS

10. IMMEDIATE CAUSE
DESCRIPTION: ____________
OBJECT / EQUIPMENT / SUBSTANCE
INFLICTING INJURY / DAMAGE: ____________

APPENDIX 2B

TRIP EXPENSES
Learner Worksheet

1. You have travelled from Halifax to Moncton to conduct a workplace inspection. Using the metric distance chart, what distance did you travel in kilometres?
2. You get $0.50 per km for travel expenses. You fill out your form once you are back in Halifax. How much are you owed for this trip?
3. How much would you be owed in travel expenses if you travelled from Fredericton to Saint John and back?

METRIC DISTANCES/DISTANCES METRIQUES

•DISTANCES VIA FERRY •DISTANCES PAR TRAVERSIER	BATHURST	CAMPBELLTON	C. TORMENTINE	EDMUNDSTON	FREDERICTON	GRAND FALLS	MONCTON	NEWCASTLE	SACKVILLE	SAINT JOHN	ST. STEPHEN	SUSSEX	WOODSTOCK
ALMA	301	410	206	450	181	398	89	223	144	141	251	62	277
BANGOR	525	501	527	366	276	325	439	497	488	291	158	367	213
BATHURST		114	264	300	246	287	209	79	249	361	363	283	347
BOSTON	912	893	927	740	666	713	832	834	875	699	542	755	594
CAMPBELLTON	114		361	190	357	180	319	188	357	460	454	393	289
C. TORMENTINE	263	361		467	273	489	96	200	62	256	366	182	372
CARAQUET	68	179	304	365	286	359	245	119	288	417	412	332	389
CHARLO	83	28	395	222	329	204	283	160	333	432	444	371	316
CHARLOTTETOWN	•327	•438	•63	•629	•344	•566	•158	•264	•124	•320	•426	•235	•447
CHATHAM	72	182	192	275	178	219	137	8	178	281	293	203	277
DALHOUSIE	91	23	353	216	337	199	298	168	349	440	452	364	313
EDMUNDSTON	300	190	463		270	64	459	267	509	373	332	387	173
FREDERICTON	248	357	273	270		217	185	169	226	103	115	117	93
HALIFAX	499	610	290	•631	•346	•568	295	420	251	•237	•351	•322	•449
HOULTON	369	319	404	184	122	138	309	290	352	232	150	259	19
MONCTON	209	319	96	458	165	391		133	42	168	275	88	287
MONTREAL	896	753	1147	547	832	610	1049	818	987	941	898	969	729
NEWCASTLE	79	188	200	267	169	211	131		170	272	284	193	268
NEW YORK	1308	1241	1275	1088	1062	1061	1180	1230	1223	1017	890	1102	941
PORTLAND	739	719	753	566	492	539	659	660	702	496	369	581	420
QUÉBEC	613	502	795	304	589	367	810	575	744	698	655	726	486
SACKVILLE	249	357	62	509	226	455	42	170		213	316	134	333
SAINT JOHN	361	460	256	372	103	320	168	272	213		110	79	202
ST. ANDREWS	373	464	355	363	126	294	266	295	312	96	31	178	171
ST. LEONARD	264	153	430	37	233	20	422	230	472	336	295	350	136
ST. STEPHEN	363	454	366	332	115	283	275	284	316	110		187	165
SUSSEX	267	393	182	387	117	397	88	193	134	79	187		216
TORONTO	1403	1292	1577	1086	1371	1149	1482	1357	1526	1481	1437	1508	1268
TRURO	399	510	190	591	381	528	195	320	151	357	463	272	484
WOODSTOCK	347	289	390	173	93	118	287	268	333	202	165	216	
YARMOUTH	•460	•402	•362	•499	•214	•436	•267	•381	•311	•105	•219	•190	•317

HEATING COSTS COMPARISON

Learner Worksheet

1. For a family of four using an old electric water heater, what is the annual cost for hot water?
2. If this family wants to replace its old electric water heater, what is the cheapest option?
3. What is this family's most expensive option?
4. If this family replaces its old electric water heater with an oil stand alone water heater, how much money will be saved annually?

Domestic Hot Water Heating Cost Comparisons - October 2003

Fuel and Appliances		Average Seasonal Efficiency	Unit of Fuel	Cost Per Unit (HST Incl.)	$ per cubic metre of hot water (HST Incl.)	Typical household annual hot water		
						Two person (120 litres/day)	Four person (240 litres/day)	Six person (360 litres/day)
Electricity								
Electric water heater - new		90%	kilowatt-hour	9.9¢	5.30	$232	$465	$696
Electric water heater - old		85%		9.9¢	5.61	$246	$491	$737
Time of use (optional)* - new		90%		4.95¢	2.65	$116	$232	$347
Oil								
Stand alone water heater		55%	litre	58.0¢	4.75	$208	$416	$624
Tankless Coil	winter	75%		58.0¢	3.48	$280	$559	$839
	summer	25%		58.0¢	10.45			
Indirect tank (with cold start boiler)	winter	75%		58.0¢	3.48	$168	$336	$505
	summer	60%		58.0¢	4.34			
Propane								
Stand alone water heater		55%	litre	90.3¢	11.20	$490	$981	$1,471

Document Use
Refresher
For Apprentices

DIAGRAMS

Module 3

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

nscc

Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

INTRODUCTION

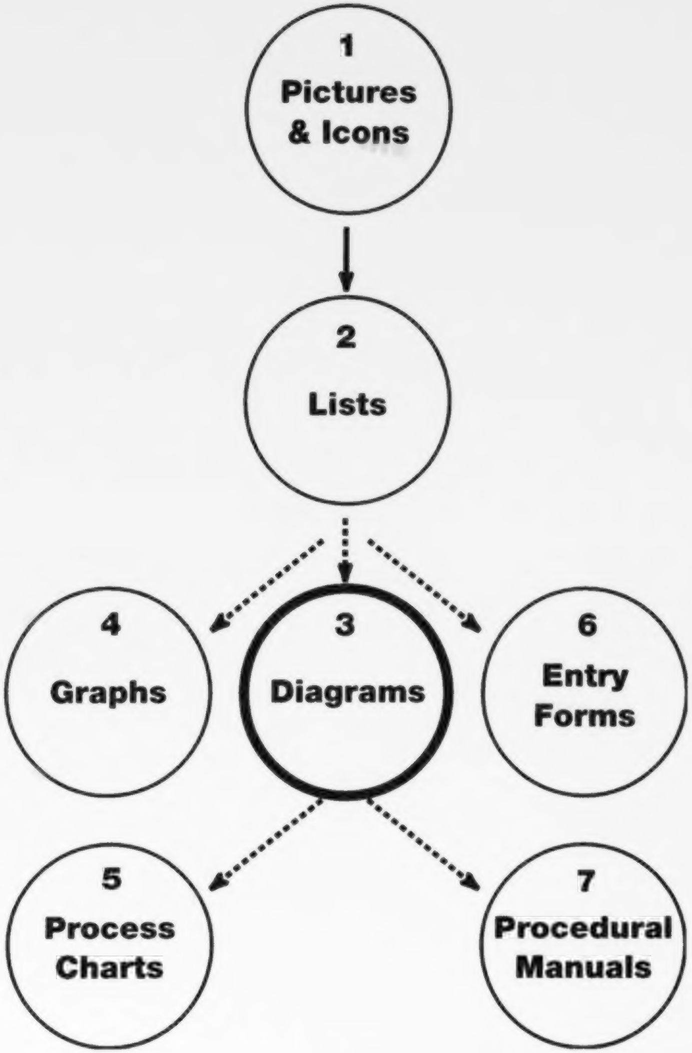
This module contains teaching and learning strategies applicable to all levels of document use, from the very simple to the complex. It is understood that some modules may need to be shortened or eliminated to meet time restrictions or student requirements. This module should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams, Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete *Module 3: Diagrams* before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learningactivities, sample documents, and activity worksheets. Please note, and reassure your learners, that the activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define diagrams as visual organizers of information.

Identify the presence of and uses of diagrams in a variety of safety and trade-related workplace documents.

Identify the underlying pictures and lists in a variety of workplace documents.

Demonstrate knowledge of diagram structure by retrieving information from various workplace diagrams, including illustrations, maps, schematics, and scale drawings.

Apply knowledge of diagrams to workplace documents.

To the Instructor...

Learner Prerequisites:
- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent
- Module 1: Pictures and Icons, Document Use Refresher for Apprentices
- Module 2: Lists, Document Use Refresher for Apprentices

Instructor Materials:
- Module 3 teaching resources, including sample documents and activity worksheets
- Optional: flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

MODULE CONTENTS

DIAGRAMS

Types and Purposes 97

Illustrations 100

Schematics 102

Scale Drawings 105

Additional Learning Activities 108

APPENDICES

Supporting Documents (Appendix 3A) 110

Activity Worksheets (Appendix 3B) 126

TYPES AND PURPOSES

Whereas pictures show appearance and relative size of objects; diagrams show function or operation – what something looks like and how something works. Diagrams do this by adding layers of detail to pictures. This topic introduces diagrams by examining the purpose, to locate information, and the layers that provide necessary information.

Strategies for Instruction

- Reinforce the fact that to show detail, diagrams use two basic forms: a picture and a list, items covered in *Module 1: Pictures and Icons*, and *Module 2: Lists*. Demonstrate these two basic forms using *From Diagram to List (page 111)*, first seen in Module 2.
- Examine the *Levers document (page 112)*. Point out that the photograph is close to reality. Compare it to the illustration that bears no physical resemblance to the picture. The diagram highlights only the parts of the lever and directions of force.
- Remind learners of the simple list created in Module 1. Have learners identify the line drawing diagram Class 2 Leaver and reinforce the simple list elements it represents. Label = Class 2 Lever, simple list = fulcrum, load, effort.
- Gain feedback from learners on types of diagrams used in the workplace. Encourage learners to bring samples to share, and share your own samples and experience where possible.

Supporting Documents

From Diagram to List (page 111)

Levers (page 112)

- Introduce general groupings for diagrams:
  - Illustrations. Include picture lists, catalogues, and drawings. Examples include *Safe Lifting (page 113)*, *Proper Positive Ventilation (page 114)*, and *Emergency Exit Plan (page 115)*.
  - Schematics are complex illustrations which are abstract representations of a process or procedure. Pictures are replaced with icons or symbols. Details focus on the direction of flow or the order of events. Examples include *Your Body as Resistors (page 116)* and *Circuit Diagram and Icons (page 117)*.
  - Scale Drawings, also known as blueprints, are abstract scale drawings. A legend explains how many metres are represented by centimetres in the drawing. Point out that the scale will vary depending on the item represented or the purpose of the drawing. These are detailed documents used in design, construction, and repair. See *Floor Plan (page 118)* and *Plumbing Plan (page 119)*. Maps are another example, such as the Map of Labrador shown in *Plan That Trip (page 131)*.

Supporting Documents

Safe Lifting (page 113 - 115)

Body as Resistors (page 116 - 117)

Floor Plan (page 118 - 119)

Plan That Trip (page 131)

Activities

Complexity Chart Revisited

Ask learners to retrieve their complexity charts from Module 1. Have learners place illustrations, schematics, and scale drawings on the chart. Discuss the reasons for placement.

Prying Patterns

Learner Worksheet (page 127)

This worksheet includes a lever diagram and the following assignment:

1. Circle the pictures.
2. Place a square around the diagram.
3. Examine the diagram. What is the label? What items would be in the list?

Activity Worksheets

Prying Patterns (p127)

ILLUSTRATIONS

Illustrations are diagrams that show detail through black-and-white outlines. These drawings are more abstract than pictures but still bear a resemblance to the real item.

Strategies for Instruction

- Review the concept that each diagram is a picture and a list, which shows greater detail.

- Introduce the fact that to illustrate detail, diagrams often show several views. These views include things not usually seen, such as your skeleton. Demonstrate with *From Diagram to List (page 111)*. Other examples include the flow of coolant through a machine, the flow of electrical current through a circuit, or the movement of a part inside an engine.

- Introduce some examples and features:
  - Assembly or exploded illustration, which is identified by an ordered series of labeled parts. *(Circular Saw Blade Replacement, page 120)*
  - Exaggerated caricature used to attract attention. *(Electrical Hazard, page 121)*
  - Shifting perspective, offers several views to demonstrate operation. *(Computer: side and back, page 122)*
  - Picture list, includes a series of pictures and text for step-by-step instructions. *(Emergency Procedures, page 123)*

- Using the above samples, reinforce the process:
  - Look at the picture.
  - Find the title.
  - Look for the list.
  - Look for additional information such as materials list, contact information, legends.

- Have learners discuss the characteristics of a good illustration. Discuss the potential challenges a poor illustration may pose at the work site.

- Brainstorm ways to deal with any challenges. Is the photo blurred? Is the text too small? Are the lines connecting the labels to the drawing too numerous or confusing? Affirm that not all diagrams are effectively drawn, but can be used to access information.

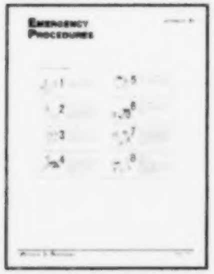
Supporting Documents

From Diagram to List (page 111)

Circular Saw (page 120)

Electrical Hazard (page 121)

Computer (page 122)



Emergency (page 123)

Activities

Find the Advantage

Learner Worksheet (page 128)

This worksheet includes the inclined plane illustration and the following assignment: [answers in brackets]

1. Examine the diagrams for an inclined plane.
2. Look at the diagram labeled Example.
   a. What is the effort distance? [6m]
   b. What is the resistance distance? [2m]
3. If mechanical advantage = effort distance/resistance distance, what is the mechanical advantage of the ramp shown in the example? [6/2=3]

Spot the Differences

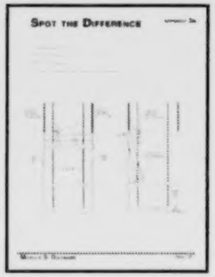
Learner Worksheet (page 129)

This worksheet presents two diagrams on fall protection and includes the following assignment:

1. Examine each diagram.
2. List the differences between the two diagrams.
3. Label each diagram.
4. What information do you gain from this document?

Activity Worksheets

Find the Advantage (p128)



Spot the Diff. (p129)

SCHEMATICS

Schematics rely on icons to show process operations. Assembly of equipment or flow of electricity, air, or water are examples.

Schematics can be difficult to understand as they bear little resemblance to reality. This type of diagram requires the reader to have prior knowledge of the meaning of the icons used. The solution is to build confidence by demonstrating how icons and message can be discovered and understood. In other words, a realistic representation may not be needed to communicate some information.

Strategies for Instruction

- Reinforce the key commonalities between schematics and the simpler illustrations. Both are a combination of a picture and a list. Revisit *Spot the Difference (page 129)*. Review the label and the list. Repeat with *Your Body as Resistors (page 116)*.

- Examine the difference between a schematic and an illustration. Note how the icons for resistance turn Your Body as Resistors diagram into a schematic.

- Introduce a more complex schematic, such as *Mathematical Formulae (page 124)*, *Site Plan (page 125)*, *Plumbing Plan (page 119)*, or *Circuit Diagram and Icons (page 117)*. Note the addition of a legend. Point out how a legend is also a combined list. Discuss how the legend helps in the understanding of the diagram and its message. Examine how legends explain abbreviations, icons, or both.

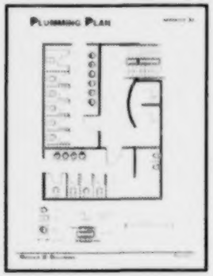
Supporting Documents

Spot the Difference (page 129)

Body as Resistors (page 116)

Mathematical (page 124)

Site Plan (page 125)


Plumbing Plan (page 119)

Circuit Diagram (page 117)

- Discuss other ways of imparting supporting information in schematics. For example, architectural drawings contain several drawings, as well as window schedules, door schedules, and a title sheet with legends of icons and abbreviations.

- Reinforce how complex documents can be more easily understood if a process is followed. Review the following process:
  - Examine the picture.
  - Look for the label and list.
  - Search for a legend and other supporting information.

Activities

Washer Specs

Learner Worksheet (page 130)

This worksheet contains a shifting perspective diagram of a washer. To reinforce the process of gaining information from a diagram, learners are asked to fill in the blanks of the following statements [answers in brackets]:

1. The washer is made from a cylindrical bar stock _____[2-1/16]______ inches in diameter by ___[3]___ inches long, machined to the outside diameter of _____[2]______inches , with a ____[25/32]____ inches diameter hole located in its centre.
2. The edge on one surface has a ___[3/32x45]________ degree chamfer.
3. The washer is ____[3/16]______ inches thick.
4. Is more than one view necessary? Explain.

Activity Worksheets

Washer Specs (p130)

SCALE DRAWINGS

Scale drawings, also known as blueprints, are used in nearly every trade. They pose a challenge because they are both abstract and highly detailed, using icons and legends to impart information. Reinforcing the process of viewing complex documents as layers of information can help make scale drawings more accessible.

Strategies for Instruction

- Review the diagram concepts covered to date: diagrams are a combination of pictures and lists, using abstract illustrations and supporting information - icons, legends, and abbreviations – to give more detail than a simple drawing or photograph.

- Introduce scale drawings. Explain that blueprint is another term commonly used, but for the purpose of this module, the term 'scale drawings' will be used. Explain that a scale drawing is a precise schematic that accurately represents measurement and relative size. Show examples, such as the *Floor Plan (page 118)*, *Site Plan (page 125)*, *Plumbing Plan (page 119)* and the map of Labrador in *Plan that Trip (page 131)*. Seek feedback on the types of scale drawings learners have seen or used.

- Identify the scale in each example. Explain that using the scale requires measurement and conversion. Be aware of units of measurement at all times, including whether measurements are in Imperial or SI (metric). Imperial measurements include inches and miles; SI (metric) measurements include centimetres and kilometres.

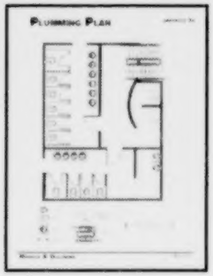
- Point out that, like schematics, some scale drawings have a legend to explain icons.

- Discuss the need for scale drawings. Point out how anyone involved in construction – tradespeople, engineers, customers – must read and understand scale drawings to ensure a home or building is constructed properly. Being able to read maps – a type of scale drawing - minimizes lost time when travelling.

Supporting Documents

Floor Plan (page 118)

Site Plan (page 125)



Plumbing Plan (page 119)

Plan that Trip (page 131)

- Revisit the process for reading diagrams:
  - Know the purpose of the drawing (i.e. electrical schematic, plumbing hookup, landscaping plan).
  - Examine the picture(s).
  - Look for the label and lists.
  - Use the icon and abbreviation legend.
- In addition, for scale drawings:
  - Find and use the scale.

Activities

Plan that Trip

Learner Worksheet (page 131)

This activity includes a map and the following assignment:

1. Find Paradise River in the lower right quadrant of the map. Circle it.
2. Find Davis Inlet in the upper left quadrant of the map. Circle it.
3. Using a ruler, or a straight edge , mark the distance between Paradise River and Davis Inlet. Using the scale on the map, what is the straight-line distance in kilometres between the two communities?

Finishing Touches

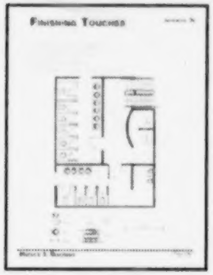
Learner Worksheet (page 132)

This activity includes the Plumbing Plan and the following assignment [answers in brackets]:

1. How many toilets are shown on the plan? [10]
2. How many telephone outlets are shown? [2]
3. What is the scale of this drawing? [9 cm = 3 m or 3 cm = 1 m]
4. Which washroom is the Men's Room? How can you tell? [urinals]

Activity Worksheets

Plan that Trip (p131)



Finishing Touches (p132)

ADDITIONAL LEARNING ACTIVITIES

Changing a Blade

Learner Worksheet (page 133)

This worksheet includes the circular saw diagram and the following questions: [answers in brackets]:

1. Where is the blade shaft? Point it out to your instructor or draw a box around it on the paper.
2. What parts are necessary to secure the blade to the blade shaft? [inner washer, outer washer, blade stud]
3. Should the large diameter of the inner washer face the blade or the blade shaft? [blade]
4. In what order should the parts be attached to the blade shaft? [inner washer, blade, outer washer, blade stud]
5. In what direction should the blade stud be tightened? [clockwise]
6. In what direction should the blade spin? [counterclockwise]

Installing a Wall Oven

Learner Worksheet (page 134)

This worksheet includes an installation diagram and the following assignment [answers in brackets]:

1. What is the minimum clearance, in mm, from the floor to the bottom of the cabinet opening? [762]
2. Circle the junction box. What is the maximum distance, in mm, that it should be from the floor? [711]
3. What must be level for proper installation? [the two runners]

Activity Worksheets

Changing a Blade (p133)

Installing a Wall Oven (p134)

Site Specifics

Learner Worksheet (page 135)

This worksheet includes a scale drawing and the following assignment [answers in brackets]:

1. What has the following dimensions: 90'-0", 40'-0"? [the foundation of the building]
2. What are the dimensions of the property lines shown in this site plan? [130'-0'x 90'-0"]
3. What is the name and width of the street that runs in a north-south direction? [Stillwater Ave., 30'-0"]

Activity Worksheets

Site Specifics (p135)

Document Use
Refresher
For Apprentices

SUPPORTING DOCUMENTS

Module 3

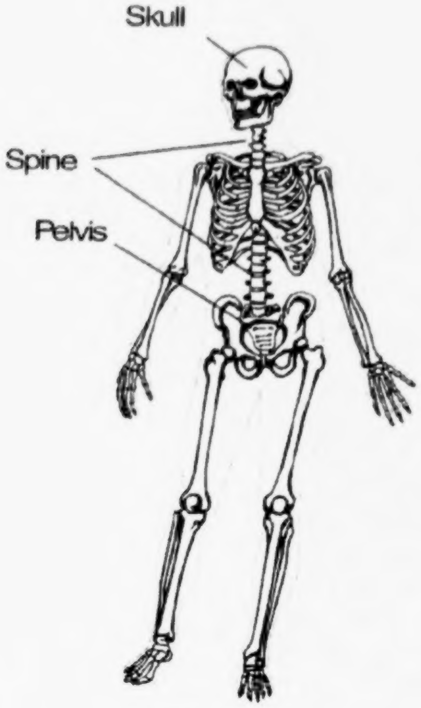
Appendix 3A

FROM DIAGRAM TO LIST

From Diagram to List

A diagram is a picture layered with a list.

The diagram:	The list:
Parts of Skeleton	Parts of Skeleton



Full skeleton

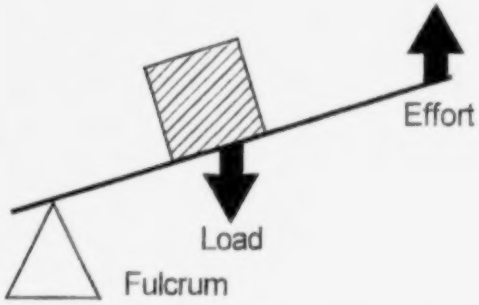
Skull
Spine
Pelvis

LEVERS

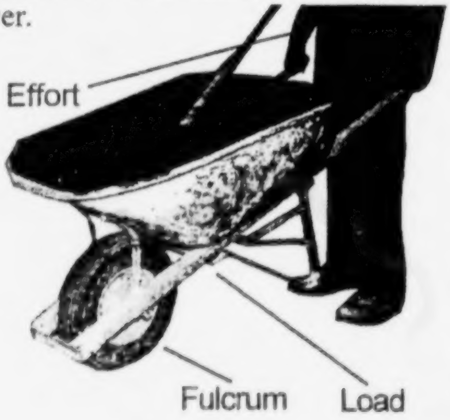
Class 2 Levers

Class 2 levers apply the resistance between the fulcrum and the effort. A wheelbarrow is a typical example of a Class 2 lever.

Examples of Class 2 levers in the trades


Effort
Load
Fulcrum

Basic concept of Class 2 lever

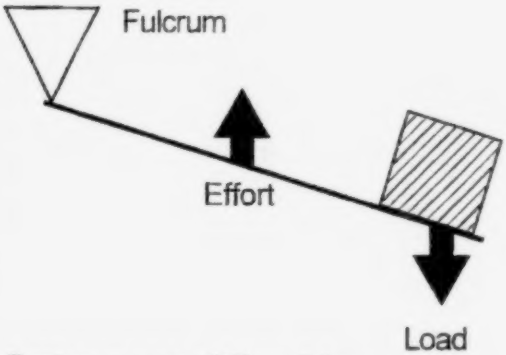

Effort
Fulcrum
Load

Wheelbarrow

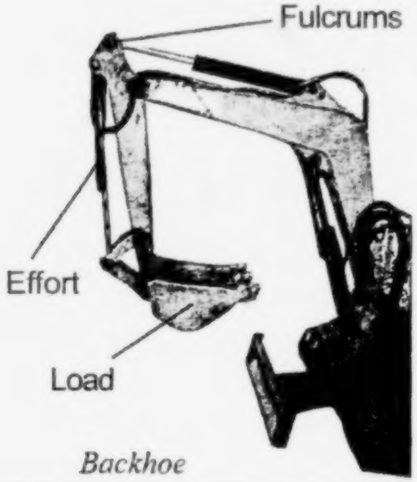
Class 3 Levers

Class 3 levers apply the effort between the resistance and the fulcrum. The effort arm is shorter than the resistance arm. The effort force is always greater than the resistant force. Think of bending and using your arm to carry something. Cranes and backhoes are examples of Class 3 levers.

Examples of Class 3 levers in the trades

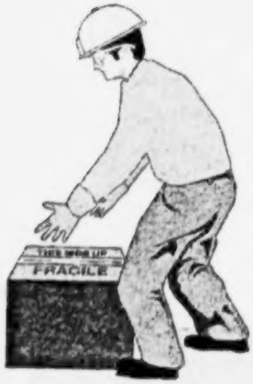

Fulcrum
Effort
Load

Basic concept of Class 3 lever


Fulcrums
Effort
Load

Backhoe

SAFE LIFTING



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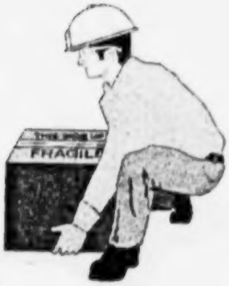

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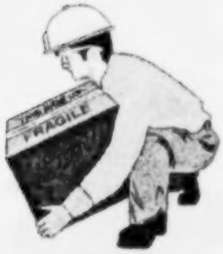

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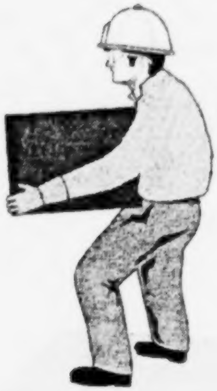

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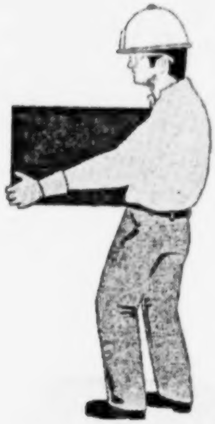

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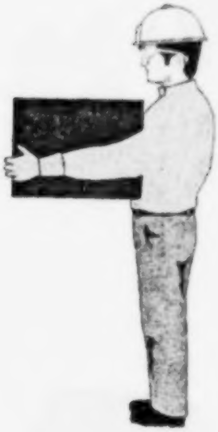
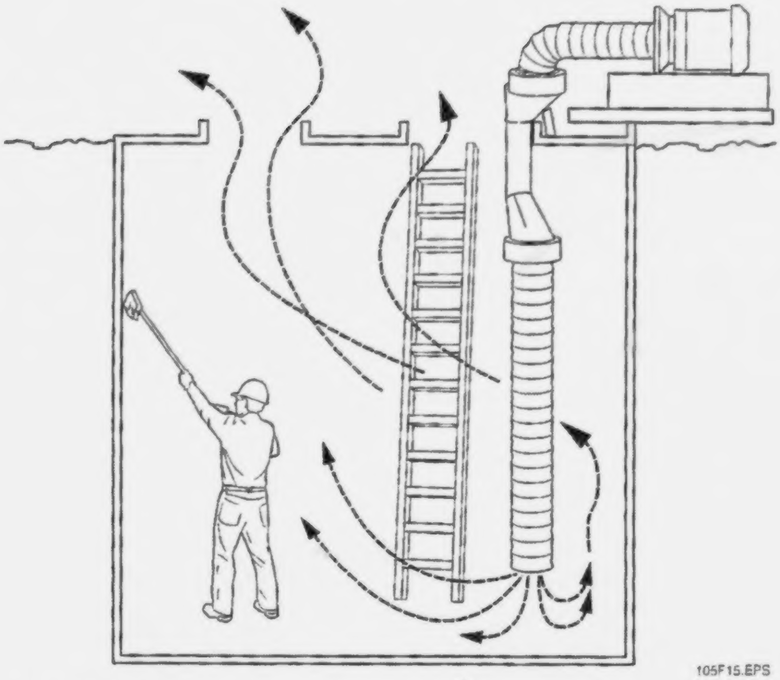


6

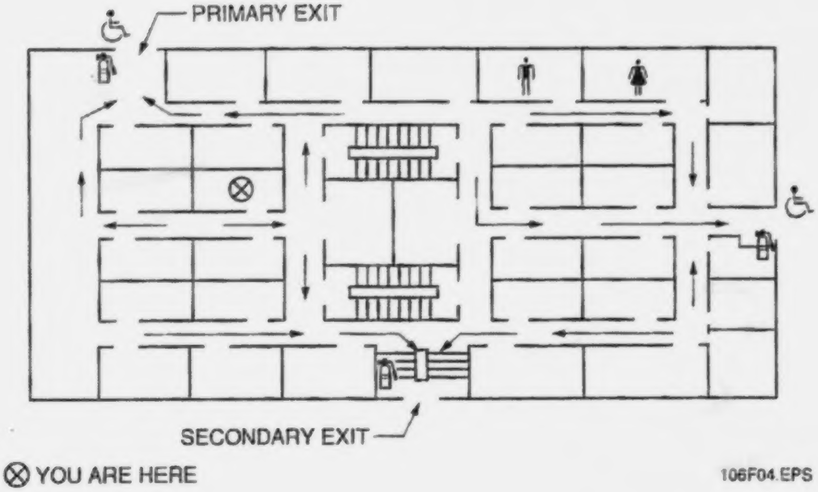
PROPER POSITIVE VENTILATION



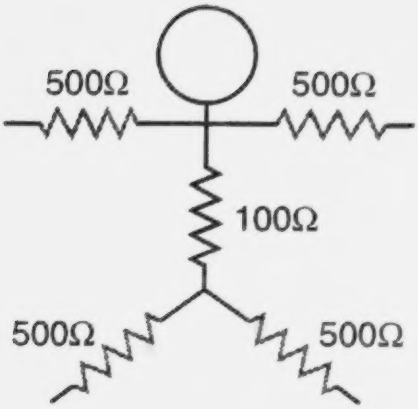
› Proper positive ventilation.

EMERGENCY EXIT PLAN

APPENDIX 3A


PRIMARY EXIT
SECONDARY EXIT
⊗ YOU ARE HERE
106F04.EPS

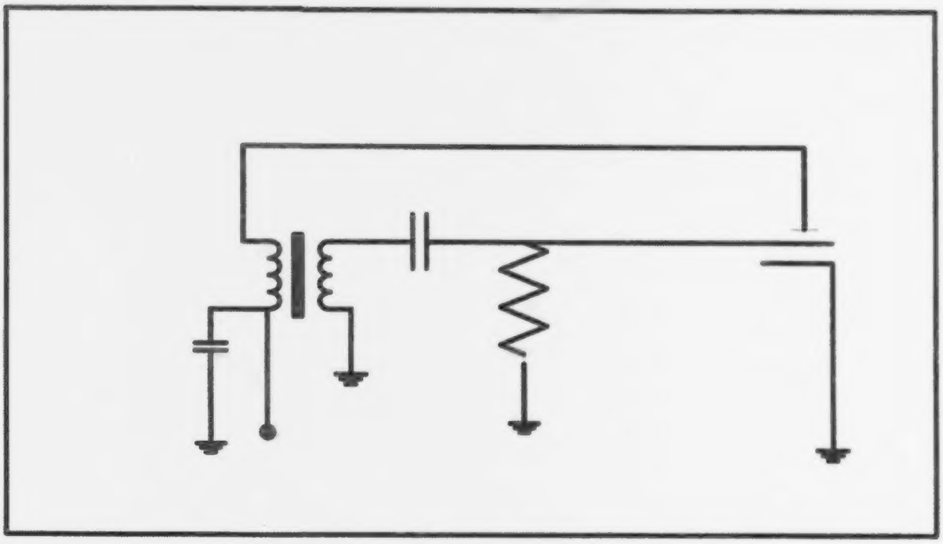
YOUR BODY AS RESISTORS

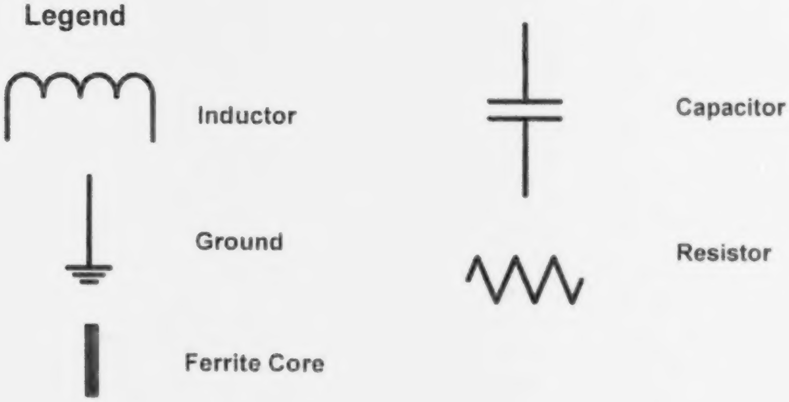

500Ω
500Ω
100Ω
500Ω
500Ω

- HAND TO HAND 1000Ω
- 120 VOLT
- FORMULA: $I = E/R$
- $120/1000 = 0.120$ AMPS OR 120 MILLIAMPS

105F01.EPS

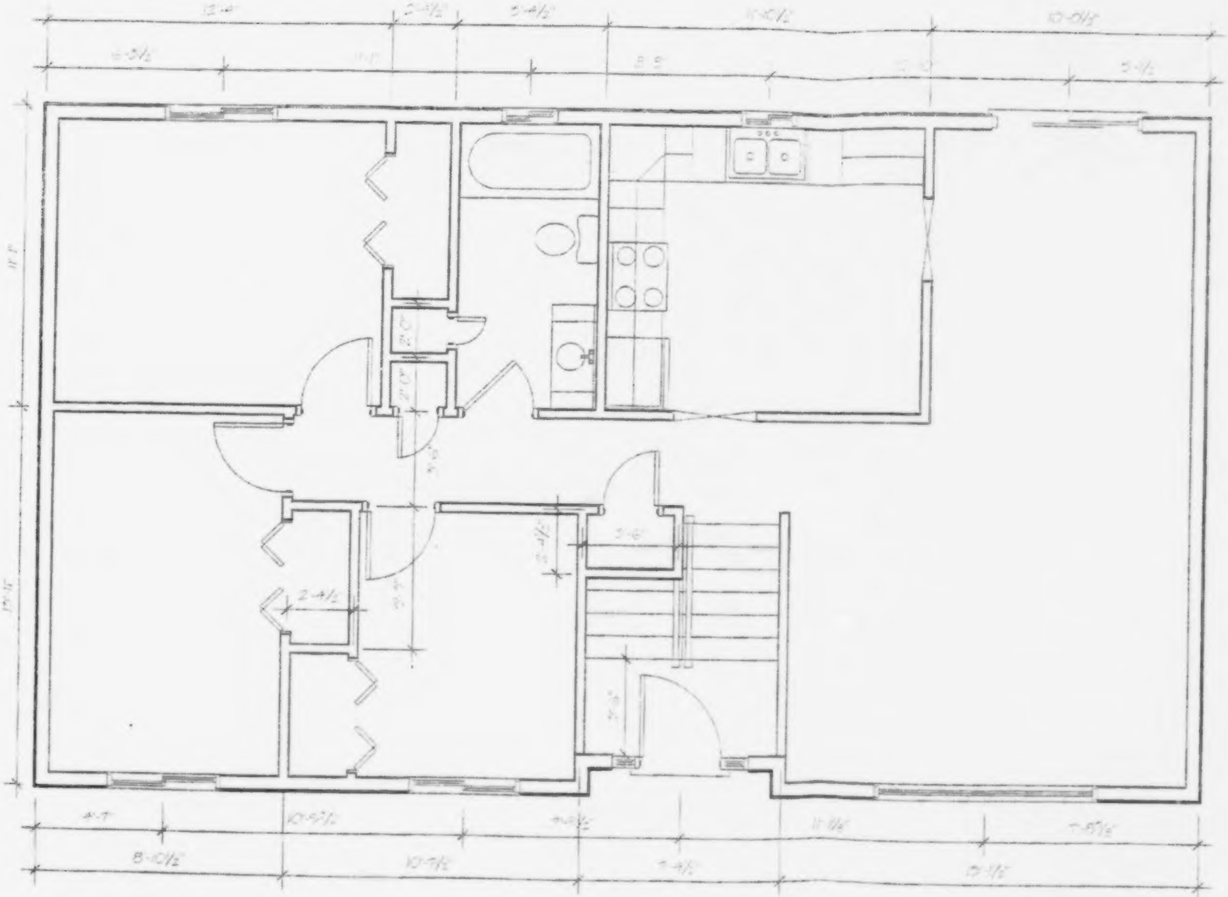
CIRCUIT DIAGRAM




Legend
Inductor
Capacitor
Ground
Resistor
Ferrite Core

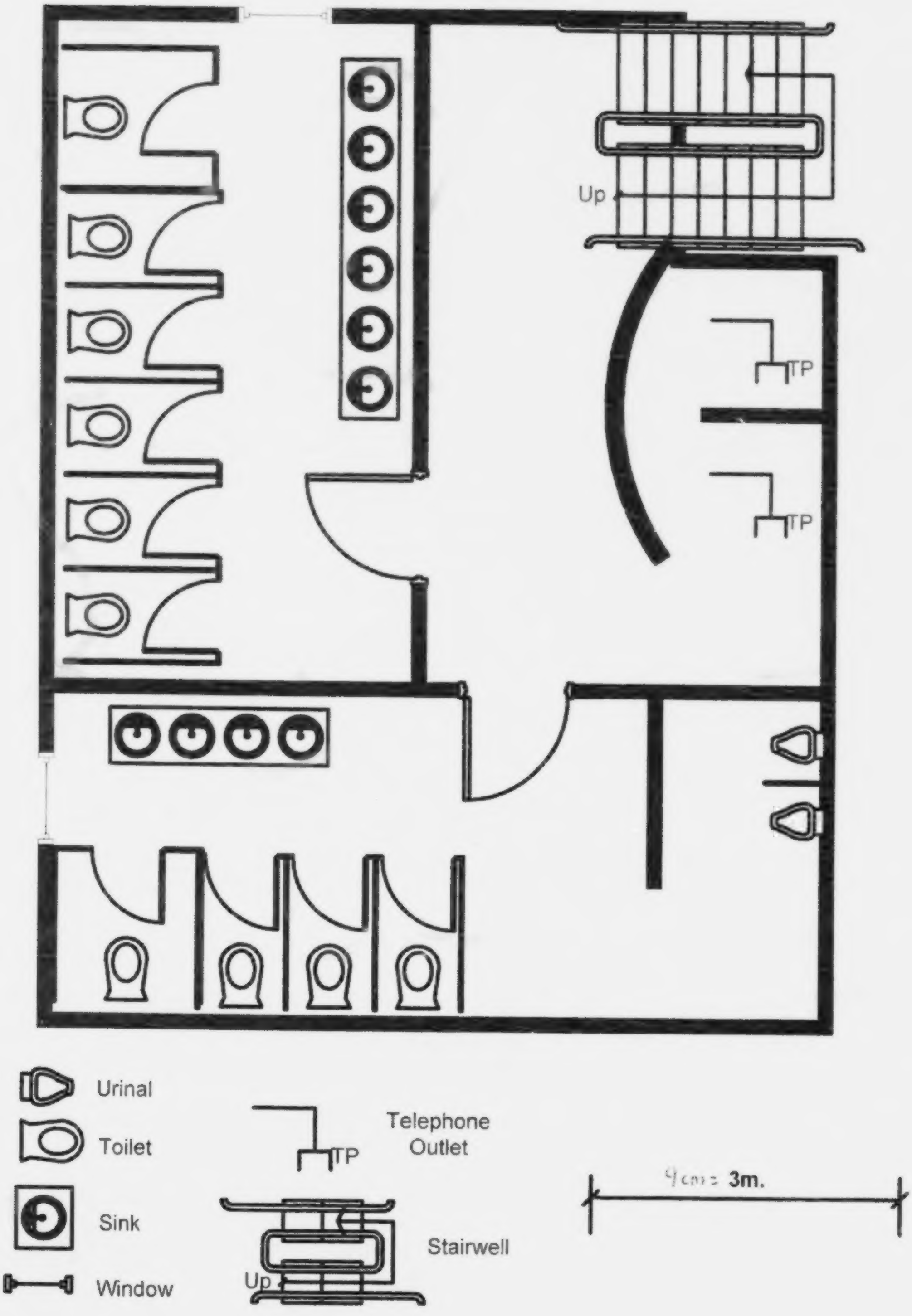
FLOOR PLAN

APPENDIX 3A

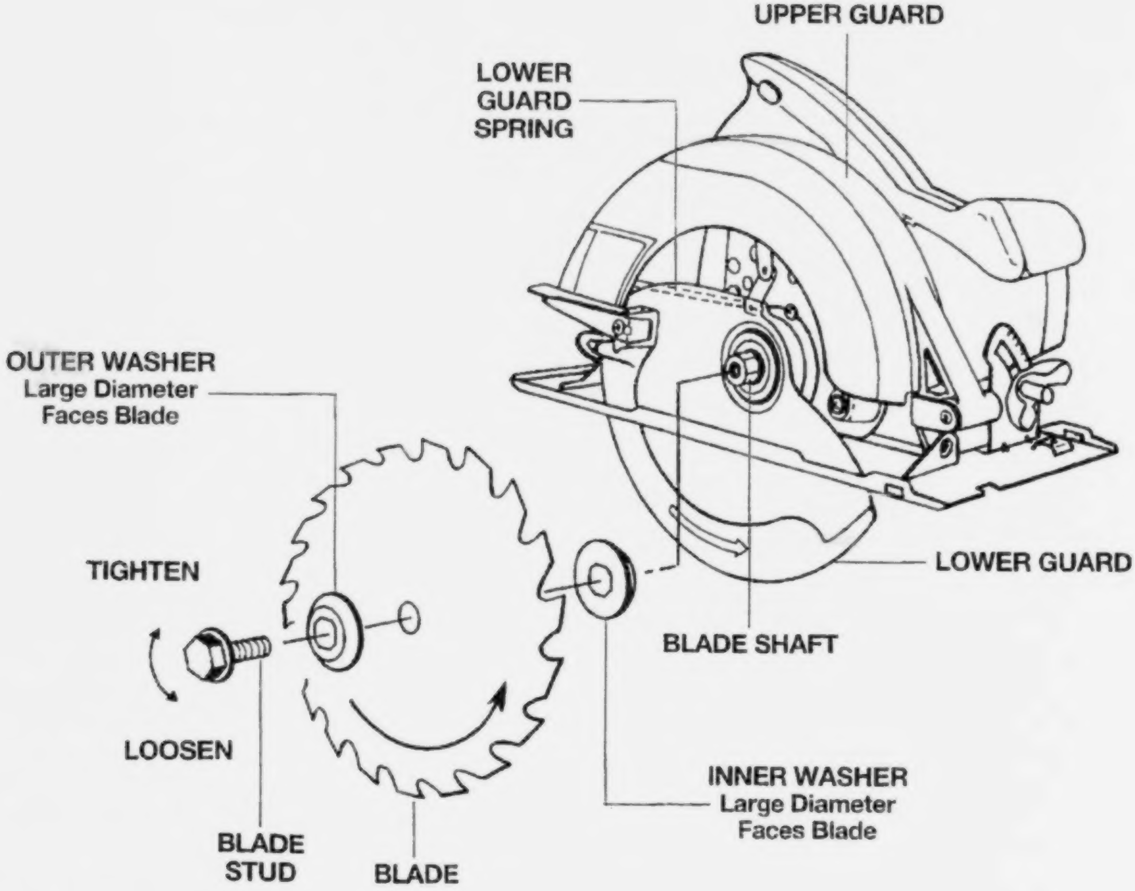

2'-4½"
5'-4½"
11'-10½"
10'-0½"
6'-0½"
2-4½
5'-6"
8'-10½"
10'-7½"
7'-4½"

project	date
RESIDENCE	11/22/03
designer	scale
B W Kaulback	1/4"= 1'-0"

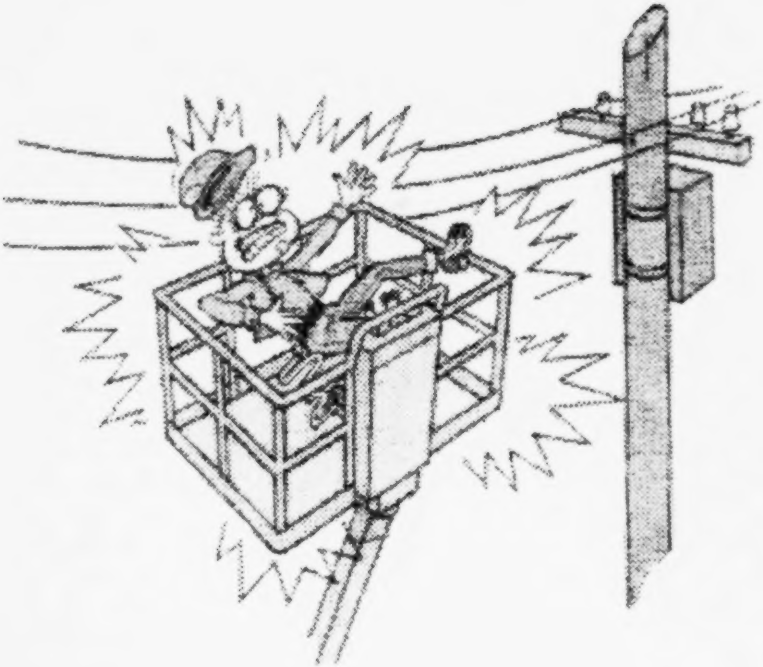
PLUMMING PLAN


Up
TP
TP
Urinal
Toilet
Sink
Window
Telephone
Outlet
TP
Stairwell
Up
4cm = 3m.

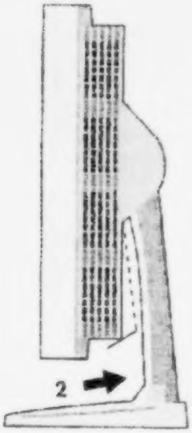
CIRCULAR SAW BLADE PLACEMENT

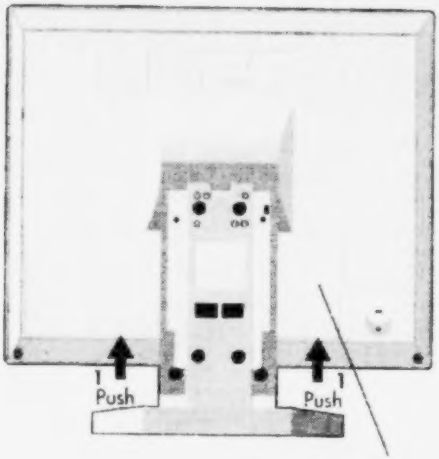

UPPER GUARD
LOWER GUARD SPRING
OUTER WASHER
Large Diameter Faces Blade
TIGHTEN
LOOSEN
LOWER GUARD
BLADE SHAFT
INNER WASHER
Large Diameter Faces Blade
BLADE STUD
BLADE

ELECTRICAL HAZARD



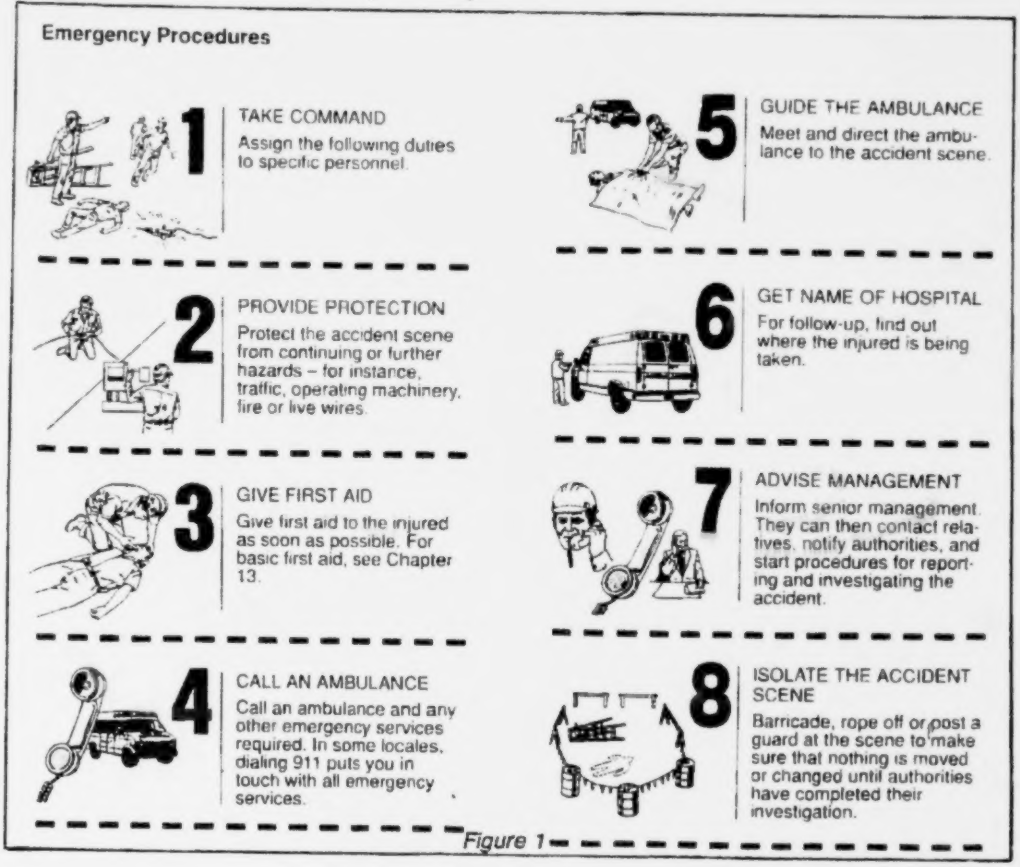
COMPUTER: Side and Back





Connector Cover
How to remove this cover.
1. Push under side
2. Remove

EMERGENCY PROCEDURES



Emergency Procedures

1 TAKE COMMAND

Assign the following duties to specific personnel.

2 PROVIDE PROTECTION

Protect the accident scene from continuing or further hazards – for instance, traffic, operating machinery, fire or live wires.

3 GIVE FIRST AID

Give first aid to the injured as soon as possible. For basic first aid, see Chapter 13.

4 CALL AN AMBULANCE

Call an ambulance and any other emergency services required. In some locales, dialing 911 puts you in touch with all emergency services.

5 GUIDE THE AMBULANCE

Meet and direct the ambulance to the accident scene.

6 GET NAME OF HOSPITAL

For follow-up, find out where the injured is being taken.

7 ADVISE MANAGEMENT

Inform senior management. They can then contact relatives, notify authorities, and start procedures for reporting and investigating the accident.

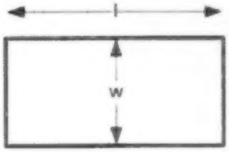
8 ISOLATE THE ACCIDENT SCENE

Barricade, rope off or post a guard at the scene to make sure that nothing is moved or changed until authorities have completed their investigation.

Figure 1

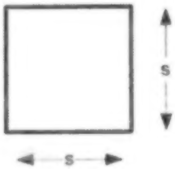
MATHEMATICAL FORMULAE

Area of a Rectangle



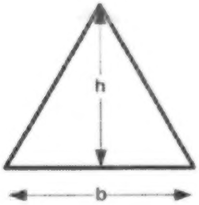
$A = lw$

Area of a Square



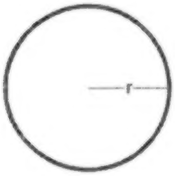
$A = s^2$

Area of a Triangle



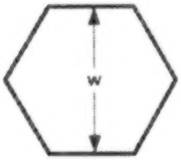
$A = bh$

Area of a Circle



$A = \pi r^2$

Area of a Hexagon



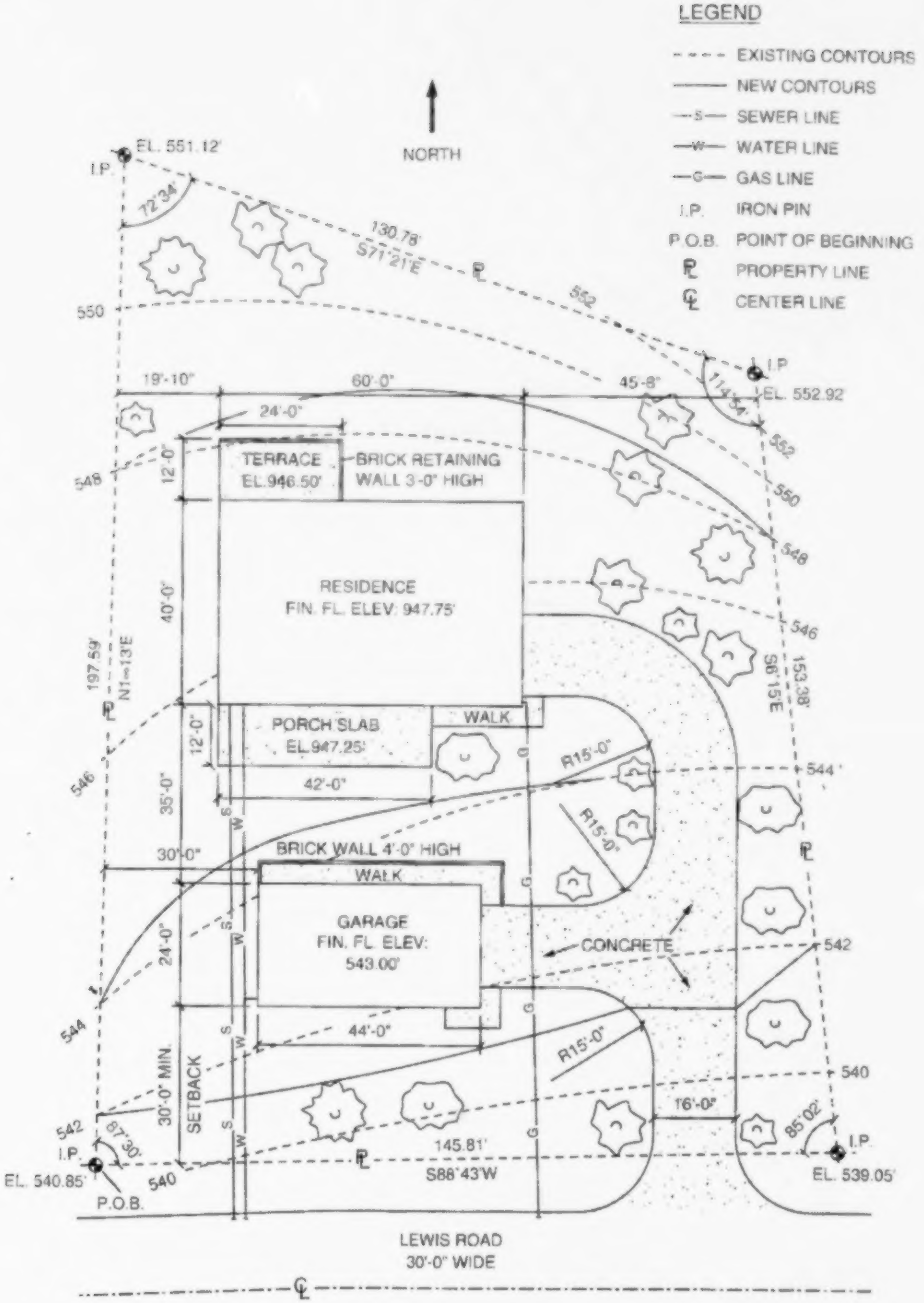
$A = 0.866\ w^2$

Legend

d= diametre
w = width
s = side
l = length
r = radius
h = height
b = base
π = 22/7

SITE PLAN

APPENDIX 3A


LEGEND
EXISTING CONTOURS
NEW CONTOURS
SEWER LINE
WATER LINE
GAS LINE
I.P. IRON PIN
P.O.B. POINT OF BEGINNING
PL PROPERTY LINE
CL CENTER LINE
NORTH
EL. 551.12'
I.P.
72°34'
130.78'
S71°21'E
552
550
I.P.
EL. 552.92
114°54'
19'-10"
60'-0"
45'-8"
24'-0"
TERRACE
EL.946.50'
BRICK RETAINING WALL 3'-0" HIGH
12'-0"
548
550
548
RESIDENCE
FIN. FL. ELEV: 947.75'
40'-0"
546
197.59'
N1°13'E
S6°15'E
153.38'
PORCH SLAB
EL.947.25'
12'-0"
WALK
42'-0"
R15'-0"
R15'-0"
544
546
35'-0"
BRICK WALL 4'-0" HIGH
30'-0"
WALK
GARAGE
FIN. FL. ELEV: 543.00'
24'-0"
CONCRETE
542
544
44'-0"
R15'-0"
540
30'-0" MIN. SETBACK
16'-0"
542
87°30'
I.P.
EL. 540.85'
P.O.B.
540
145.81'
S88°43'W
85°02'
I.P.
EL. 539.05'
LEWIS ROAD
30'-0" WIDE
S
W
G

SITE PLAN
SCALE: 1" = 30'-0"

Activity

Document Use
Refresher
For Apprentices

ACTIVITY WORKSHEETS

Module 3

Appendix 3B

PRYING PATTERNS

APPENDIX 3B

Learner Worksheet

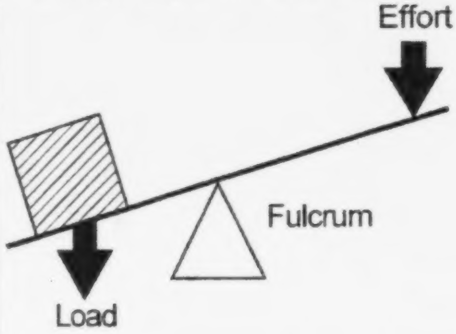
1. Circle the pictures.
2. Place a square around the diagram.
3. Examine the diagram. What is the label? What items would be in the list?

There are three classes or types of levers. The placement of the fulcrum determines whether the lever is Class 1, 2, or 3.

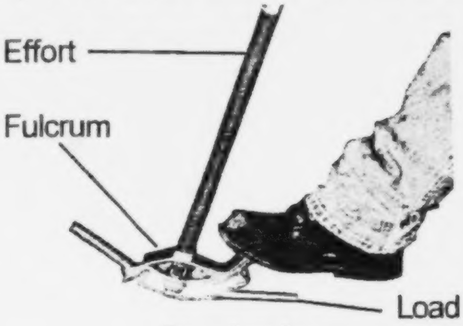
Class 1 Lever

The fulcrum is between the resistant force (load) and the effort force. Crowbars, bolt cutters, tin snips, and pliers are examples of first class or Class 1 levers.

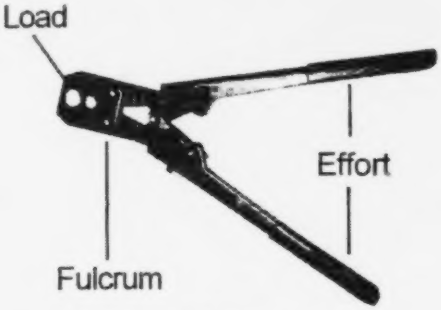
Examples of Class 1 levers in the trades



Basic concept of Class 1 lever



Pipe bender



Crimpers

FIND THE ADVANTAGE

Learner Worksheet

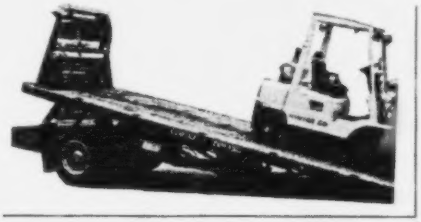
1. Examine the diagrams for an inclined plane.

2. Look at the diagram labeled Example.
   a. What is the effort distance?
   b. What is the resistance distance?

3. If mechanical advantage = effort distance/resistance distance, what is the mechanical advantage of the ramp shown in the Example?

Inclined Planes

Inclined planes are slanted surfaces. The load is raised by moving it up the inclined plane thus reducing the force needed to move the load. One of the most common uses of the inclined plane is to load and unload machines and equipment on and off trucks.

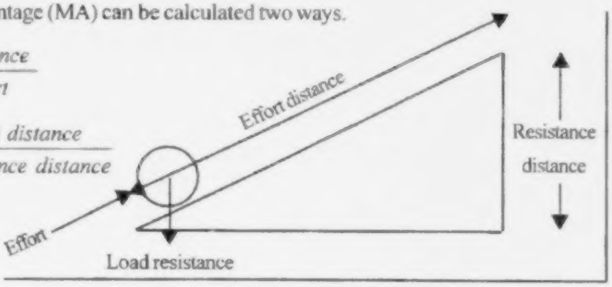


An inclined plane requires a small effort over a longer distance to overcome a force over a shorter distance. As the incline becomes steeper it becomes more difficult to move the load. Effort must increase to accomplish the work.

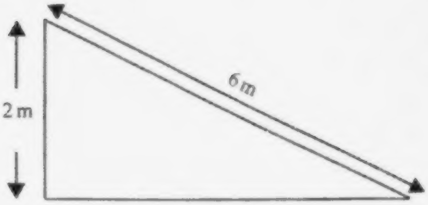
Mechanical Advantage (MA) can be calculated two ways.

1) $MA = \dfrac{Resistance}{Effort}$

2) $MA = \dfrac{Effort\ distance}{Resistance\ distance}$



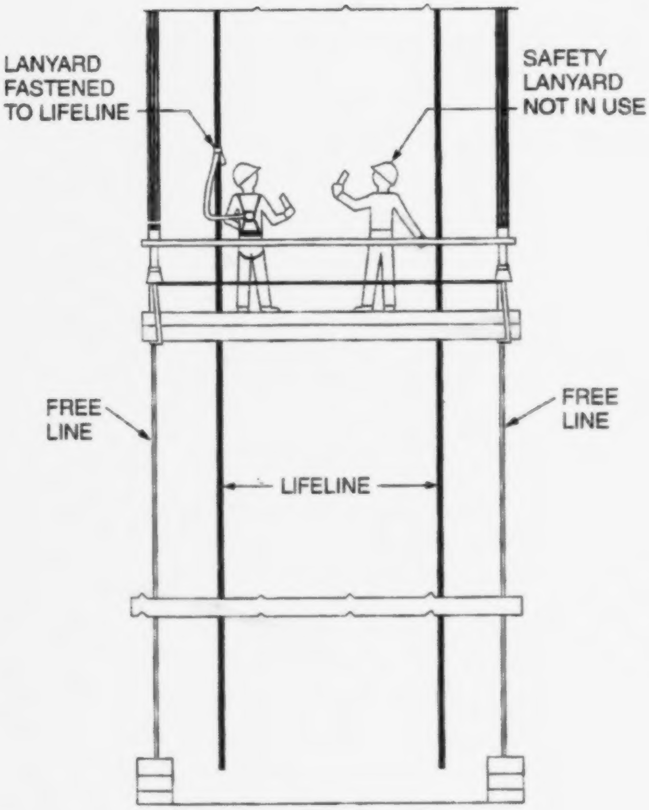
Example:

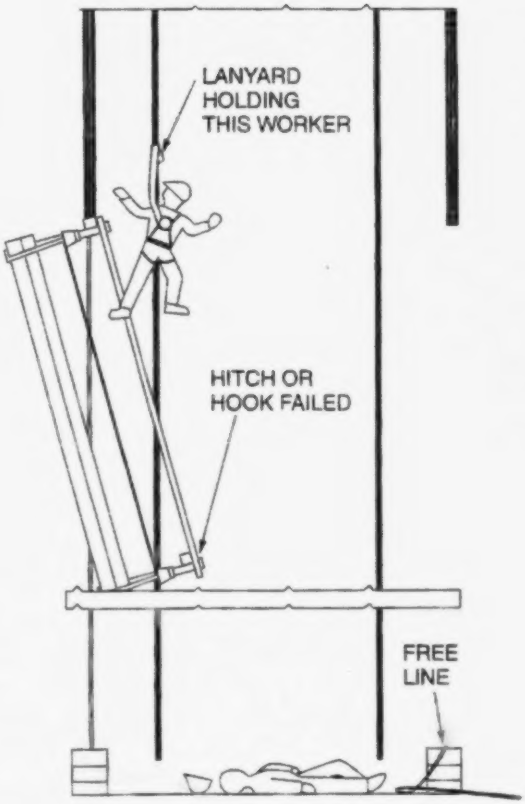


SPOT THE DIFFERENCE

Learner Worksheet

1. Examine each diagram.
2. List the differences between the two diagrams.
3. Label each diagram.
4. What information do you gain from this document?

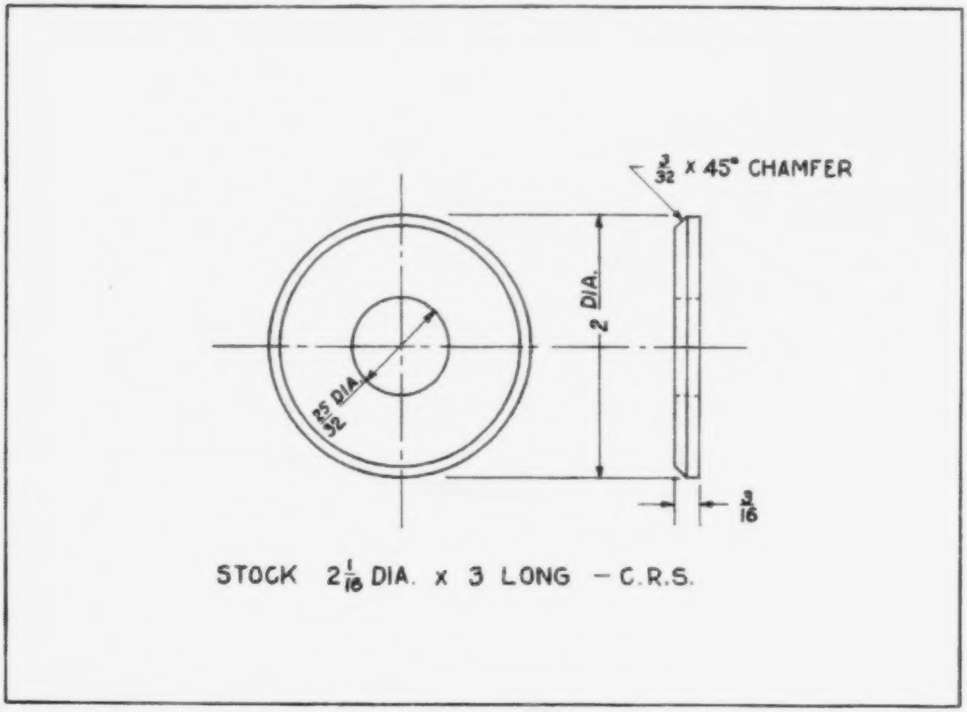

LANYARD FASTENED TO LIFELINE
SAFETY LANYARD NOT IN USE
FREE LINE
FREE LINE
LIFELINE


LANYARD HOLDING THIS WORKER
HITCH OR HOOK FAILED
FREE LINE

WASHER SPECS
Learner Worksheet

Fill in the blanks of the following statements:

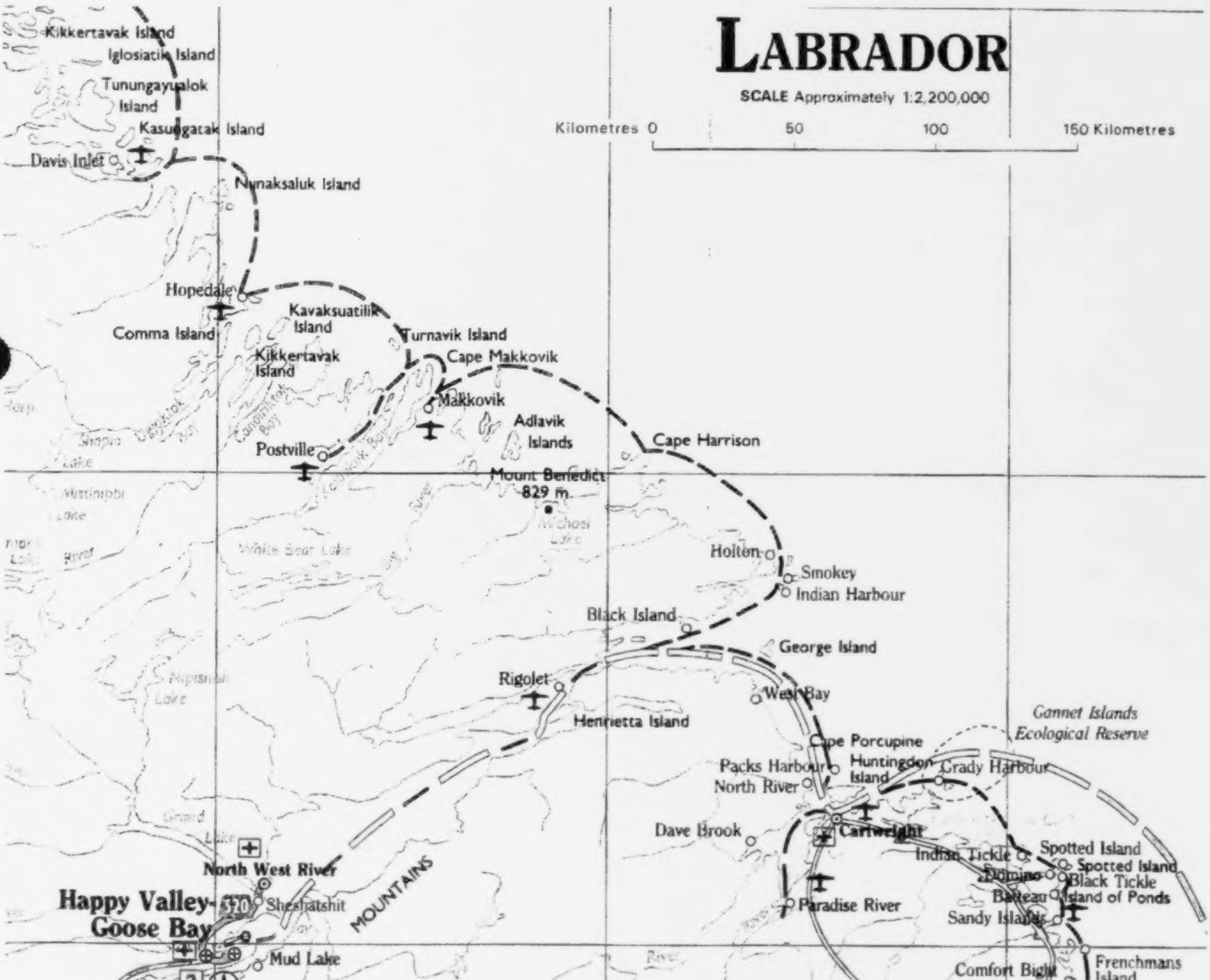
1. The washer is made from a cylindrical bar stock ____________________ inches in diameter by ____________ inches long, machined to the outside diameter of _______________inches , with a ____________ inches diameter hole located in its centre.
2. The edge on one surface has a ________________ degree chamfer.
3. The washer is _______________ inches thick.
4. Is more than one view necessary? Explain.



$\frac{3}{32}$ x 45° CHAMFER
2 DIA.
$\frac{25}{32}$ DIA.
$\frac{3}{16}$
STOCK $2\frac{1}{16}$ DIA. x 3 LONG – C.R.S.

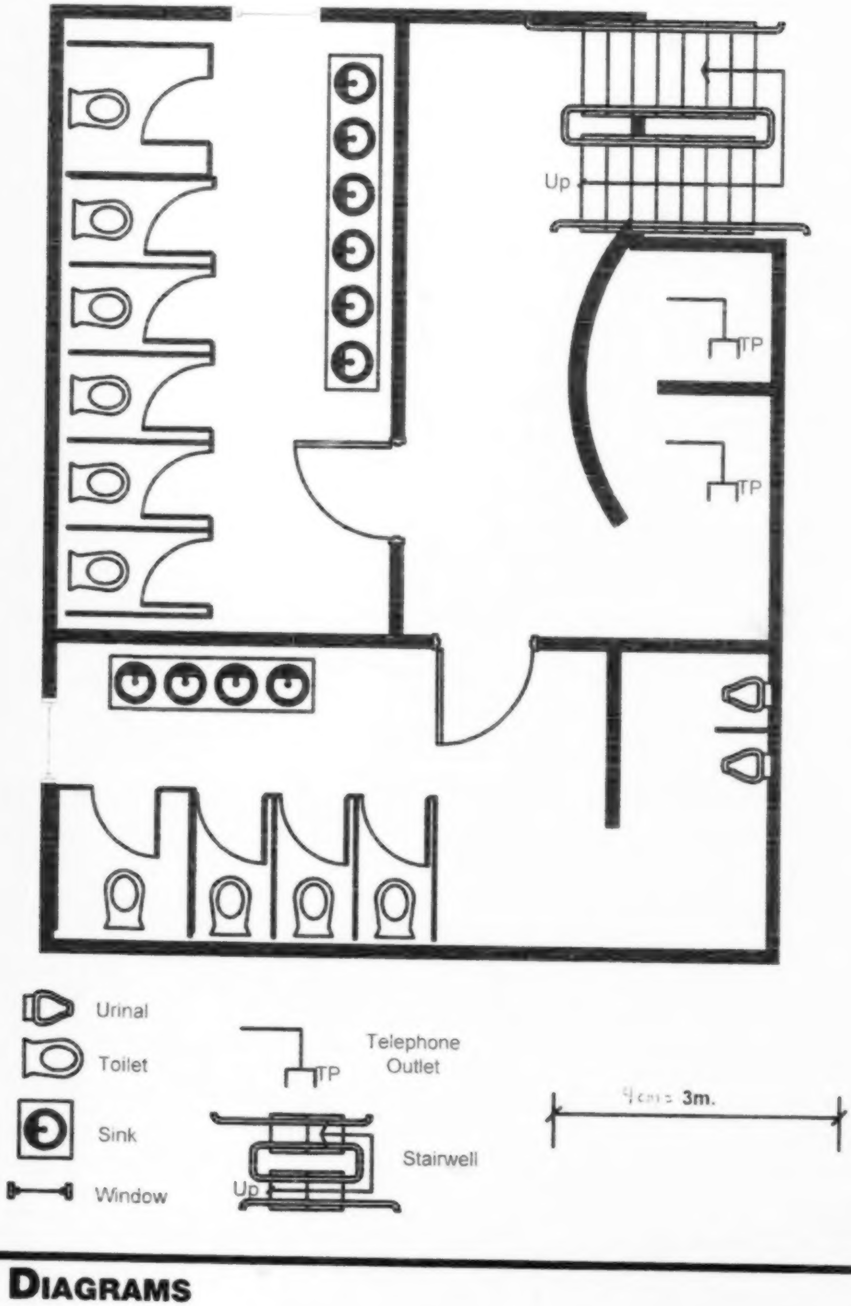
PLAN THAT TRIP
Learner Worksheet

1. Find Paradise River in the lower right quadrant of the map. Circle it.
2. Find Davis Inlet in the upper left quadrant of the map. Circle it.
3. Using a ruler, or a straight edge of paper, mark the distance between Paradise River and Davis Inlet. Using the scale on the map, what is the straight-line distance in kilometres between the two communities?


LABRADOR
SCALE Approximately 1:2,200,000
Kilometres 0
50
100
150 Kilometres
Kikkertavak Island
Iglosiatik Island
Tunungayualok Island
Kasungatak Island
Davis Inlet
Nunaksaluk Island
Hopedale
Comma Island
Kavaksuatilik Island
Kikkertavak Island
Turnavik Island
Cape Makkovik
Makkovik
Adlavik Islands
Postville
Cape Harrison
Mount Benedict 829 m.
Michael Lake
White Bear Lake
Holton
Smokey
Indian Harbour
Black Island
George Island
Rigolet
West Bay
Henrietta Island
Gannet Islands Ecological Reserve
Cape Porcupine
Packs Harbour
Huntingdon Island
Crady Harbour
North River
Cartwright
Dave Brook
Indian Tickle
Spotted Island
Spotted Island
Domino
Black Tickle
Batteau
Island of Ponds
Paradise River
Sandy Islands
North West River
Happy Valley-Goose Bay
520
Sheshatshit
MOUNTAINS
Mud Lake
Frenchmans Island
Comfort Bight
Hawke Harbour
Grand Lake
Parke Lake
River

FINISHING TOUCHES
Learner Worksheet

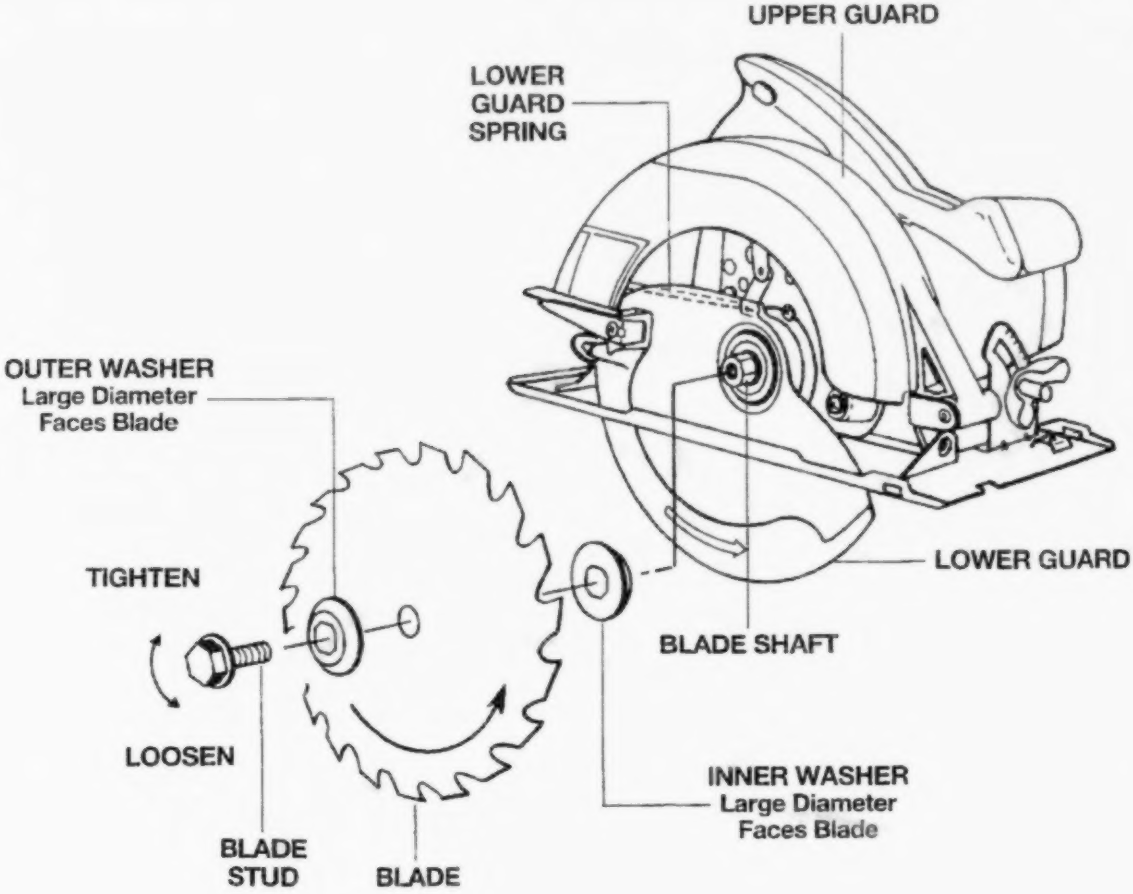
1. How many toilets are shown on the plan?
2. How many telephone outlets are shown?
3. What is the scale of this drawing?
4. Which washroom is the Men's Room? How can you tell?


Up
TP
TP
Urinal
Toilet
TP
Telephone Outlet
Sink
Stairwell
Up
Window
4cm = 3m.

CHANGING A BLADE

Learner Worksheet

1. Where is the blade shaft? Point it out to your instructor or draw a box around it on the paper.
2. What parts are necessary to secure the blade to the blade shaft?
3. Should the large diameter of the inner washer fade the bade or the blade shaft?
4. In what order should the parts be attached to the blade shaft?
5. In what direction should the blade stud be tightened?
6. In what direction should the blade spin?


UPPER GUARD
LOWER GUARD SPRING
OUTER WASHER
Large Diameter Faces Blade
TIGHTEN
LOOSEN
LOWER GUARD
BLADE SHAFT
INNER WASHER
Large Diameter Faces Blade
BLADE STUD
BLADE

INSTALLING A WALL OVEN

Learner Worksheet

1. What is the minimum clearance, in mm, from the floor to the bottom of the cabinet opening?
2. Circle the junction box. What is the maximum distance, in mm, that it should be from the floor?
3. What must be level for proper installation?

INSTALLATION SPECIFICATIONS FOR 24″ WALL OVEN

ELECTRICAL

Voltage – 120/240 60 Hz
Wattage – 5.2 kW
Amperage – 22 A

THIS UNIT MUST BE INSTALLED BY A QUALIFIED ELECTRICIAN RESPECTING ALL APPLICABLE CODES

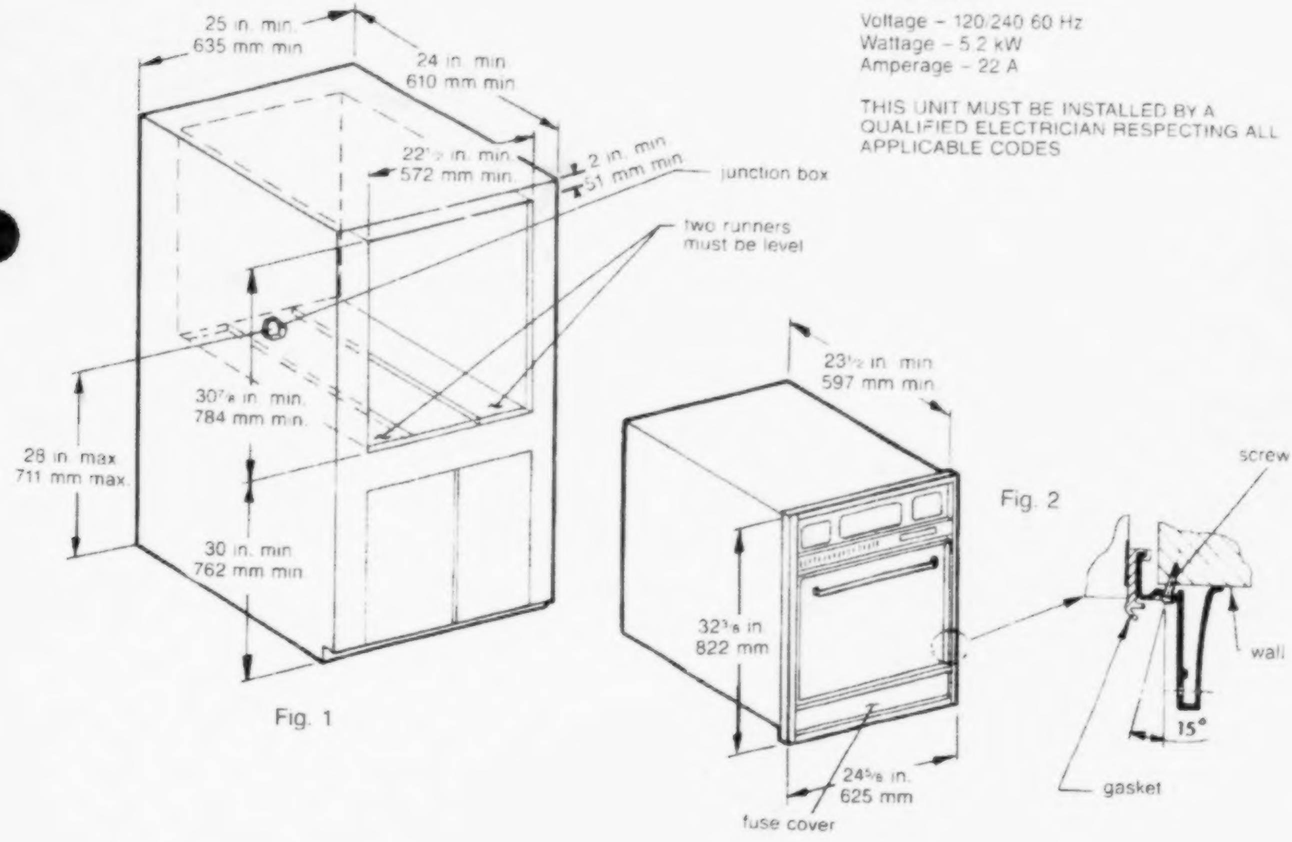
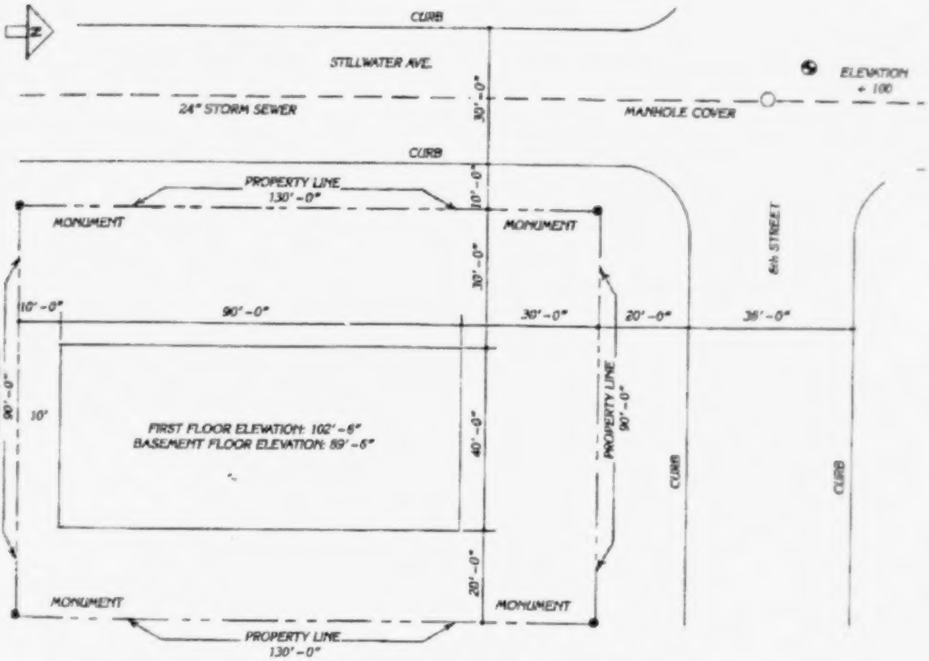

25 in. min.
635 mm min.
24 in. min.
610 mm min.
22½ in. min.
572 mm min.
2 in. min.
51 mm min.
junction box
two runners
must be level
30⅞ in. min.
784 mm min.
28 in. max.
711 mm max.
30 in. min.
762 mm min.
23½ in. min.
597 mm min.
32⅜ in.
822 mm
24⅝ in.
625 mm
fuse cover
screw
wall
15°
gasket

Fig. 1

Fig. 2

SITE SPECIFICS
Learner Worksheet

1. What has the following dimensions: 90'-0", 40'-0"?
2. What are the dimensions of the property lines shown in this site plan?
3. What is the name and width of the street that runs in a north-south direction?


N
CURB
STILLWATER AVE.
ELEVATION
+ 100
30'-0"
24" STORM SEWER
MANHOLE COVER
CURB
PROPERTY LINE
130'-0"
10'-0"
MONUMENT
MONUMENT
8th STREET
30'-0"
10'-0"
90'-0"
30'-0"
20'-0"
36'-0"
PROPERTY LINE
90'-0"
10'
FIRST FLOOR ELEVATION: 102'-6"
BASEMENT FLOOR ELEVATION: 89'-6"
40'-0"
PROPERTY LINE
90'-0"
CURB
CURB
20'-0"
MONUMENT
MONUMENT
PROPERTY LINE
130'-0"

Document Use
Refresher
For Apprentices

GRAPHS

Module 4

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

nscc

Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

INTRODUCTION

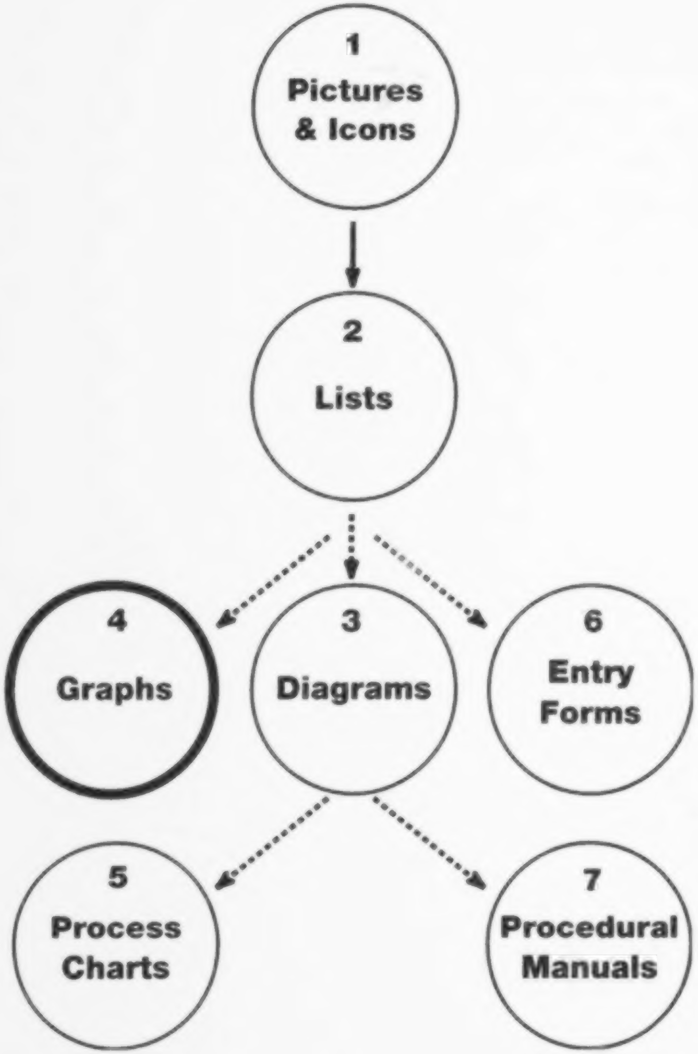
This module contains teaching and learning strategies applicable to all levels of document use, from the simple to the complex. It is understood that some modules may need to be shortened or eliminated to meet time restrictions or student requirements. This module should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams*, *Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete *Module 3: Diagrams* before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learning activities, sample documents, and activity worksheets. Please note, and reassure your learners, that the activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define graphs as visual organizers of data lists.

Identify the presence and use of graphs in a variety of safety and trade-related workplace documents.

Identify the three basic types of graphs: pie graph, bar graph, and line graph.

Demonstrate knowledge of graph construction by identifying, locating and retrieving information from various graphs.

Apply knowledge of graphs to in workplace documents.

To the Instructor...

Learner Prerequisites:

- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent
- Module 1: Pictures and Icons, Document Use Refresher for Apprentices
- Module 2: Lists, Document Use Refresher for Apprentices

Instructor Materials:

- Module 4 teaching resources, including sample documents and activity worksheets
- Optional: flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

MODULE CONTENTS

GRAPHS

Types and Purposes 140

Pie Graphs 143

Bar Graphs 146

Line Graphs 149

Additional Learning Activities 152

APPENDICES

Supporting Documents (Appendix 4A) 154

Activity Worksheets (Appendix 4B) 167

TYPES AND PURPOSE

Graphs are pictorial representations of numerical data. Showing technical data as a picture can be easier to understand and work with. Graphs, however, can be confusing if the patterns used to create and read them are not understood. Understanding these patterns makes the data contained in graphs more accessible, literally unlocking a world of information in workplace documents.

Strategies for Instruction

- Define graph as a method of showing a change in one variable when compared to a change in another variable. A graph shows words and numbers as a line, bar, pie, or other picture that varies in size or position. In other words, a graph gives a picture to a numerical value and can show increase, maintenance or decrease.

- Emphasize that graphs are found in various workplace document. Time-lost incidents, production volumes, growth rates, and temperature charts are some examples. Present *Composition of Clean Air (page 155)*, *Decibel Levels of Familiar Sounds (page 156)*, and *Typical Pulling Forces for Various Wraps (page 157)* as examples. Point out how pie graphs are more concrete, and line graphs are more abstract.

- Obtain feedback from the learners on their experience with graphs. What have they seen, what have they used, how they have used them? Invite learners to bring in samples to share, and share your samples and experience where possible.

- Point out that a graph converts technical data into a picture. A graph creates a picture from a combined, intersected, or nested list. The more complex the list the more complex the graph required. Use *From Graph to List (page 158)* as a demonstration. Apply the process to the other samples. Show how the list is the data: it can be time, volume, temperature or any set value.

- Explain that graphs provide two forms of information: a general statement and specific details. Use *Trade Income (page 159)* as an example. The graph provides a general statement about average earnings and seasonal trend of a trade. Specifically, the graph yields the income for a certain month. Using those specific details, other information can be calculated such as average annual income, months of increase and months of decline, etc.

Supporting Documents

Clean Air (page 155)

Decibel Levels (page 156)

Typical Pulling Forces (page 157)

Graph to List (page 158)

Trade Income (page 159)

- Share the *Site Profile (page 160)*. Point out how the graph actually forms a picture of the land it is profiling.

- Explain that different types of graphs are used according to the volume and type of data, audience, and purpose. If the graph is to demonstrate elevation, production rates, or temperature change, a line graph works well. For comparison purposes, a bar graph or pie chart are effective. Using *Composition of Clean Air (page 155)* and *Decibel Levels of Familiar Sounds (page 156)*, show the ease in comparing at a glance the various data presented.

- Introduce the patterns for reading graphs of any type:
    - Use the title to identify the main purpose of the graph.
    - Identify the type of graph being used.
    - Identify data categories; that is, know what information is being shared and how it is compared.

- Reinforce the similarity to reading other documents:
    - Know the information you seek.
    - Find the label or title.
    - Identify the lists.
    - Locate information.

Supporting Documents

Site Profile (page 160)

Clean Air (page 155)

Decibel Levels (page 156)

Activities

Complexity Chart Revisited

Learner Worksheet (page 168); Instructor Key (page 169)

Provide learners with a variety of documents from the inventory included in the Instructor Key. Ask learners to place each sample on their Complexity Chart first used in Module1. Discuss the order in which they recorded their samples on the chart. Compare their ordering to the concrete and abstract.

From Graph to Income

Learner Worksheet (page 170); Instructor Key (page 171)

Have learners examine *Trade Income (page 159)* and fill in the list of data used to create the graph.

Activity Worksheets

Complexity Chart Learner (p168)

Complexity Chart Instructor (p169)

Graph to Income Learner (p170)

Graph to Income Instructor (p171)

PIE GRAPHS

Pie graphs are the least abstract of the three general types covered in this refresher. The picture is close to reality and imparts a specific piece of data. This makes pie graphs a good starting point in introduce and reinforce the patterns to understand graphs.

Strategies for Instruction

- Point out that as its name says, a pie graph displays data as a wedge of a circle or a piece of pie. This visual representation is used to explain parts of a whole.

- Reinforce that pie graphs are built from lists. Since pie graphs show percentages, they can be built from lists that are combined, intersected, or nesting. There is no X or Y axis since a whole pie, or circle, adds up to 100%. Demonstrate with *Composition of Clean Air (Page 155)*.

- Point out that pie pieces may be coloured, shaded, or patterned. Pieces may be shown together in a circle, or may be separated: see *Average Employment Income By Educational Attainment (page 161)*. Note the similarity to an exploded assembly diagram, with pieces placed apart for emphasis.

- Using the same sample, reinforce the use of a legend. Demonstrate that a pie graph may use a legend for colour or shading of pie pieces. There may also be a legend for number values, or number values may be written on or attached to the pie piece itself.

Supporting Documents

Composition Air (Page 155)

Avgerage Income (page 161)

- Reinforce the pattern for reading graphs:
  - Use the title to identify the main purpose of the graph.
  - Identify the type of graph being used.
  - Identify data categories; that is, know what information is being shared and how it is compared.
  - Locate labels or a legend to distinguish each piece of pie.

- Relate this to the pattern of reading diagrams and other workplace documents:
  - Know the information you need to find.
  - Check the label and title.
  - Check the scale.
  - Use the lists and legends.
  - Locate required information.

Activities

The Air We Breathe

Learner Worksheet (page 172)

This activity includes Composition of Clean Air and the following assignment [answers in brackets]:

1. Examine the pie graph.
2. List the components of clean air, from the largest percentage to the smallest percentage. [Nitrogen, Oxygen, Argon, Others]
3. What is the specific percentage of oxygen required in clean air? [20.947]

Have learners complete the worksheet.

Activity Worksheets

worksheet (p172)

BAR GRAPHS

Bar graphs are more abstract than pie graphs and incorporate multiple lists of data. This topic builds on the patterns introduced in the examination of pie graphs and introduces patterns to accommodate more complex data lists.

Strategies for Instruction

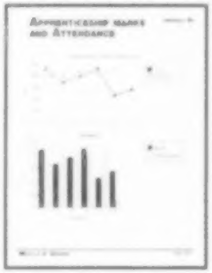
- Review the definition of a graph. A graph is pictoral representation of numerical data.
- Introduce bar graphs. A bar graph is a visual representation of one variable compared to one or more other variables.
- Present *Decibel Levels of Familiar Sounds (page 156)* and *Air Contaminants Limits (page 162)*. Point out that like the name says, bar graphs display data not as a line, but as a series of bars. This visual representation is useful in highlighting the difference between data sets.
- Point out that bars may be coloured three-dimensional blocks, line blocks, or stacks of pictures or icons. Bars may be stacked vertically or horizontally as in *Typical Pulling Forces (page 157)*. The appearance is not important as long as the data is clearly understood. The appearance does not affect the system for reading the graph.
- In reading a bar graph data is arranged vertically (Y axis) and horizontally (X axis). Identify the X and Y axes. Explain the importance of knowing the scale of the axis.

Supporting Documents

Decibel Levels (page 156)

Air Contaminants (page 162)

Pulling Forces (page 157)



Apprenticeship Marks (page 163)

- Point out the legend. Explain that in some bar graphs, there is a legend for scale, especially if icons are used instead of solid bars. There is also a legend for colour or design to distinguish between two or more bars. Demonstrate with *Apprenticeship Marks and Attendance (page 163).*

- Reinforce the pattern for reading bar graphs, pointing out its similarity to the patterns for reading pie graphs, diagrams and other workplace documents:
  - Use the title to identify the main purpose of the graph.
  - Identify the type of graph being used.
  - Identify data categories; that is, know what information is being shared and how it is compared.
  - Check the scale; in the case of bar graphs, the scale is listed for the X and Y axes.

Activities

Decibel Levels

Learner Worksheet (page 173)

This activity includes the Decibel Levels of Familiar Sounds graph and the following assignment [answers in brackets]:

1. Examine the bar graph provided. What produces the highest decibel level? [Rocket Launch] What is the rating in dB? [180]
2. What produces the lowest decibel level? [Busy Traffic] What is the rating in dB? [75]
3. How many items exceed the pain threshold of 140 dB? [2] List these items. [Gunshot, Rocket Launch]

Activity Worksheets

worksheet (p173)

LINE GRAPHS

Line graphs are the most common form of graph and the most abstract. Reinforcing the patterns learned with pie and bar graphs can help locate the necessary information and ease the discomfort of using line graphs.

Strategies for Instruction

- Review the definition of a graph. A graph is pictoral representation of numerical data.

- Introduce line graphs. Present *Typical Pulling Forces (page 157)*, *Boiling Point of Water (page 164)*, and *Rate of Fall (page 165)*. Explain that line graphs are often used to show trends such as the drop in voltage with time, the change in wire capacity with size, or the variation of the boiling point of water with land elevation.

- Point out the horizontal or X axis and the vertical or Y axis. Relate these to earlier examples of bar graphs. Show how the line on the graph is the result of points of intersection between the X and Y axis. Show how each axis has a scale: volts, degrees, metres. Explain the importance of knowing the scale to read a graph properly. The scale is necessary to retrieve the correct data; otherwise, 10 feet could be mistaken for 10 kilometres, or even 10 metres. Refer to *Rate of Fall (Page 165)* to highlight the need for accuracy.

- Demonstrate how to read a line graph. Explain that one variable, either the X or Y value, is needed. By tracing with your finger up from the X axis or across from the Y axis to the line, the other value can be determined – the specific value. Explain that by examining the line as a whole, observing whether it rises, falls or stays flat, the general picture can be obtained.

- Examine *Boiling Point of Water (Page 164)*, showing the change of water's boiling point with elevation. Demonstrate a specific value: the boiling point at 250 m. Then, examine the entire line for the trend: as elevation increases, the boiling point decreases.

Supporting Documents

Pulling Forces (page 157)

Boiling Point (page 164)

Rate of Fall (page 165)

- Point out how several trends or data sets can be contained on one line graph. Explain how line graphs with multiple data sets use a legend to distinguish each line, just as bar and pie graphs do.

- Demonstrate with *Wire Current Capacities (page 166)*. Emphasize that more complex graphs are read as any document, by focusing on the information needed and searching accordingly. *Wire Current Capacities* may seem complex, with lines for both copper and aluminum wire capacity. By focusing on the necessary line - copper, for example – and using the specific data needed, graphs provide a pictoral representation of data.

- Point out that viewing the lines together can provide useful information. In this case, viewing copper and aluminum capacities together allows for comparison that can be used to calculate the length of wire needed and its cost.

- Explain that some graphs contain a control line – a horizontal line through the middle to show average or normal conditions. A common example is a temperature trend chart on television weather forecasts, which compares daily temperatures with the average.

- Reinforce the pattern for reading line graphs, pointing out its similarity to the system for reading pie graphs, bar graphs, diagrams and other workplace documents:
  - Use the title to identify the main purpose of the graph.
  - Identify the type of graph being used; if it is a line graph, read it from left to right, as you would read a sentence.
  - Identify data categories; that is, know what information is being shared and how it is compared.
  - Check the scale; in the case of a line graph, the scale is listed for the X and Y axes.

Supporting Documents

Wire Current (page 166)

Activities

Data Hunt

Learner Worksheet (page 174)

This worksheet includes three sample graphs: *Trade Income (page 159)*, *Boiling Point of Water (page 164)*, and *Wire Current Capacities (page 166)*. Learners are given the following assignment [answers in brackets]:

1. What were this tradesperson's average earnings in June? [$4,000]
2. In what months did this tradesperson make more than $5,000? [July, August, September]
3. What is the ampacity of a size 8 copper wire? [80]
4. If you require an ampacity of at least 100 amps, what size of wire can you use? [1,2,3,4, or 6]
5. At zero elevation, water boils at 100C°. What is the boiling point at 1500 m elevation? [94.8C°]
6. If your pot of water boils at 96.5C°, what is your elevation? [1,000 m]

Activity Worksheets

worksheet (p174)

ADDITIONAL LEARNING ACTIVITIES AND ASSESSMENTS

Dangerous Air

Learner Worksheet (page 175)

This activity provides practice in working with bar graphs. The worksheet includes the Air Contaminants graph and the following assignment [answers in brackets]:

1. What is the scale of the Y axis? [ppm – parts per million]
2. Create a combined list from this graph, with the contaminants and their allowable levels
3. What contaminant is the most dangerous; that is, what contaminant can do the most damage in the smallest amount? [cresol]

Bar or Line?

Learner Worksheet (page 176)

This activity compares Grades and Attendance for Apprenticeship Students as a bar graph and a line graph. The worksheet includes the graphs and the following assignment [answers in brackets]:

1. Using the bar graph, list the marks and attendance of students 3, 4, and 5. [3-70,80; 4-90,80; 5-45,90]
2. Using the line graph, list the marks and attendance of students 1 and 6. [1-90,75; 6-55,10]
3. What general information can be gathered from the bar graph? [differences between students, relationship between mark and attendance]
4. What general information can be gathered from the line graph? [trend: attendance down, marks down]
5. Are there any exceptions? [Students 5 and 6]. Explain.

Activity Worksheets

Dangerous Air (p175)

Bar or Line (p176)

The Pull of Gravity

Learner Worksheet (page 177)

This worksheet includes the Rate of Fall graph, showing the speed at which an adult worker falls to the ground, and the following assignment [answers in brackets]:

1. How far, in metres, would a worker fall in two seconds [20m]? In three seconds [44m]?
2. Does distance double with time, or is there another relationship? [distance more than doubles with time; in other words, there is a very rapid increase in distance with each passing second]
3. What trend does the line graph show? [fall distance increases rapidly with each passing second]

Activity Worksheets

Pull of Gravity (p177)

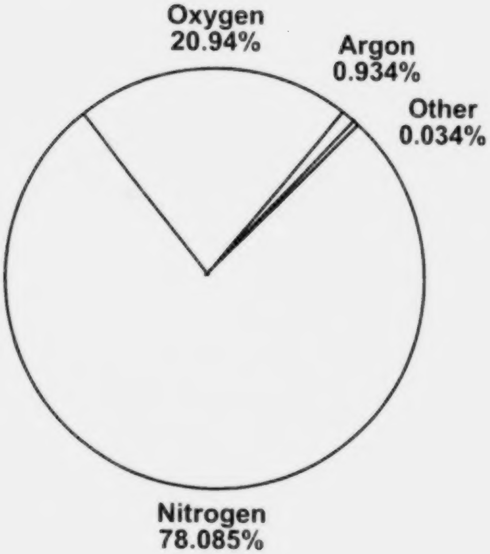
Document Use
Refresher
For Apprentices

SUPPORTING DOCUMENTS

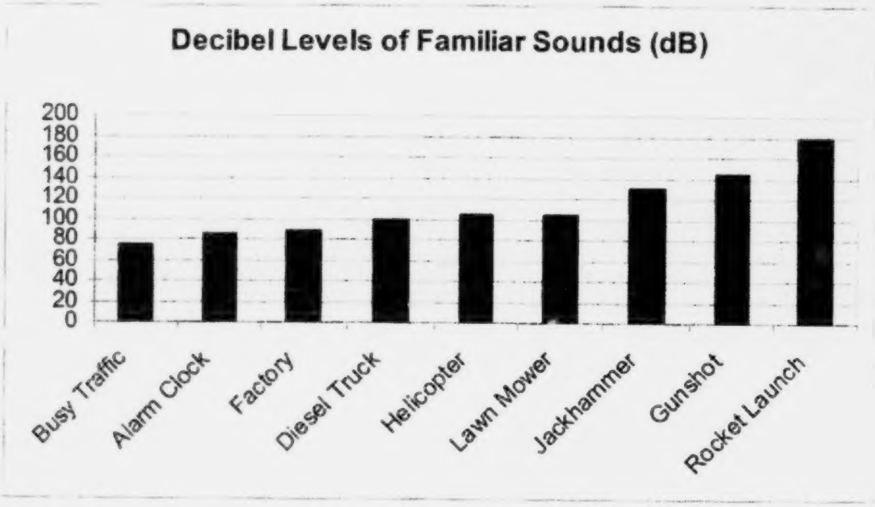
Module 4

Appendix 4A

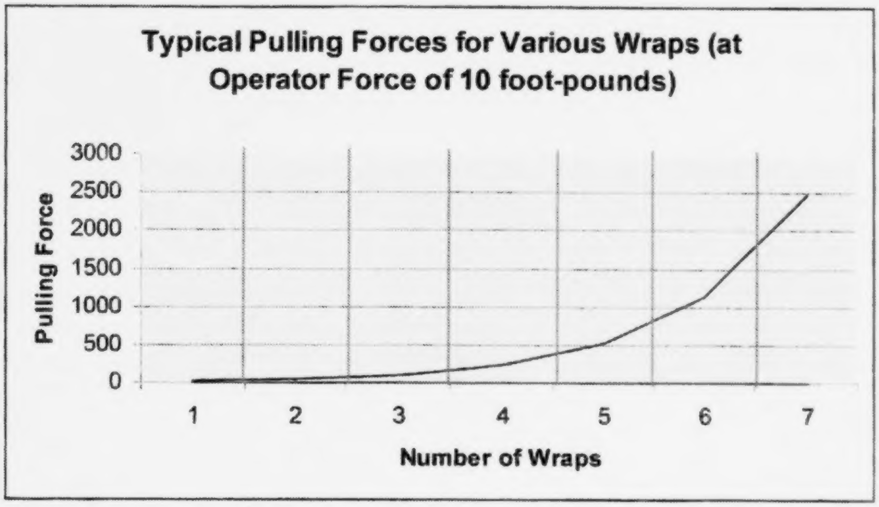
COMPOSITION OF CLEAN AIR

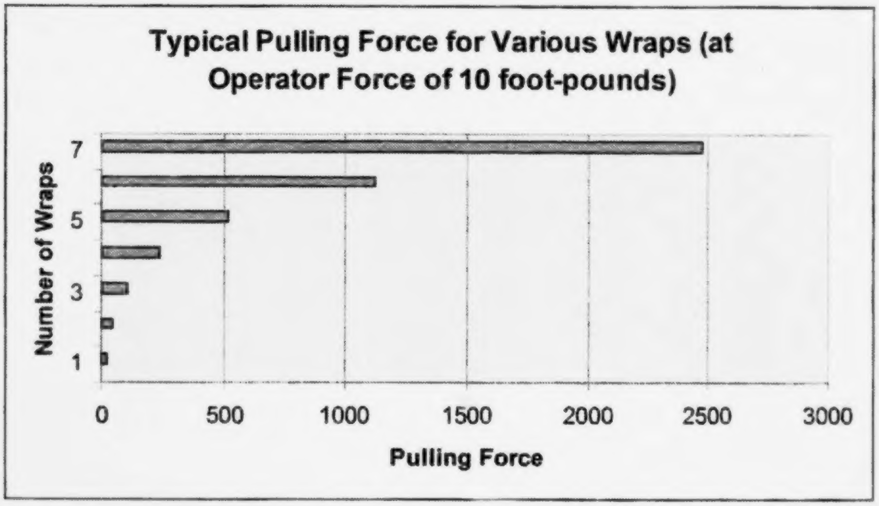


DECIBEL LEVELS OF FAMILIAR SOUNDS



TYPICAL PULLING FORCES FOR VARIOUS WRAPS



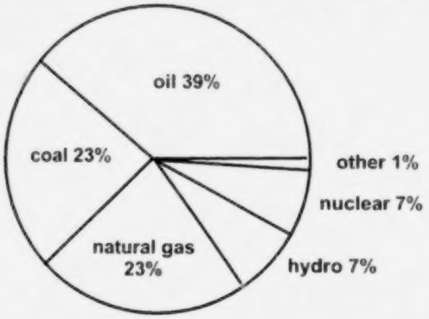


From Graph to List

A graph turns a written list into a visual representation.

The graph:

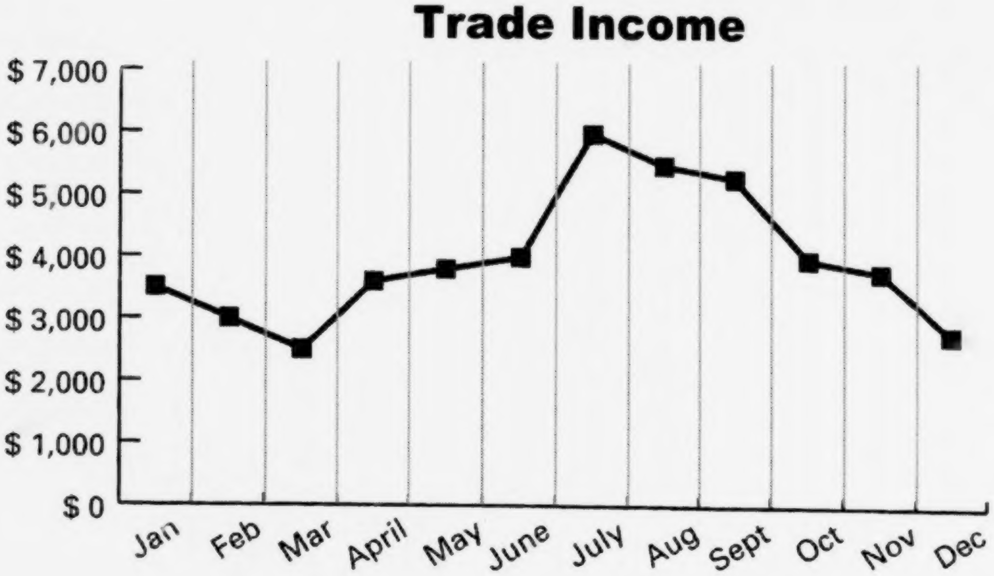
Energy Sources for North America in 1988



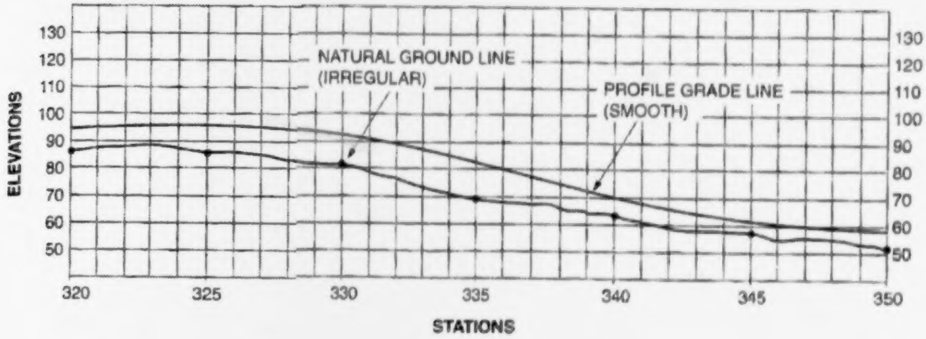
The list:

Energy Sources for North America in 1988	Amount
Oil	39%
Coal	23%
Natural Gas	23%
Hydro	7%
Nuclear	7%
Other	1%

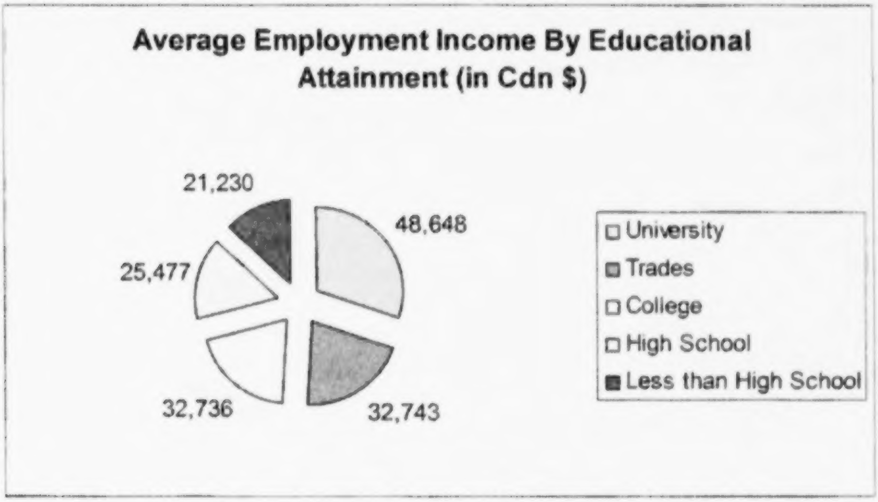
TRADE INCOME



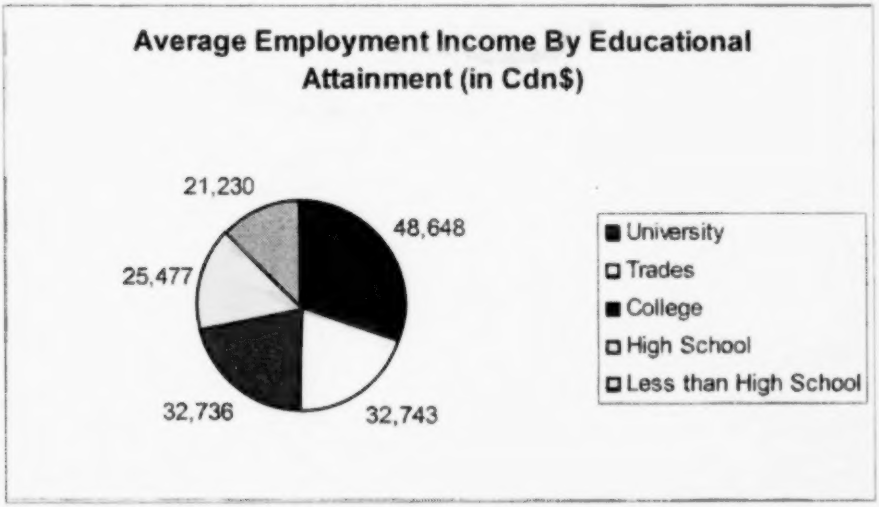
SITE PROFILE



AVERAGE EMPLOYMENT INCOME BY EDUCATIONAL ATTAINMENT

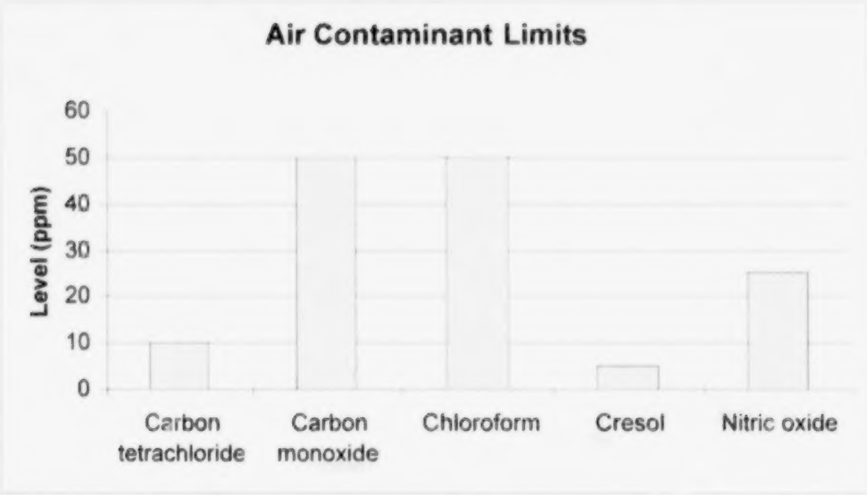


Source: Canadian Apprenticeship Forum, Skilled Trades Backgrounder, Aug 2004

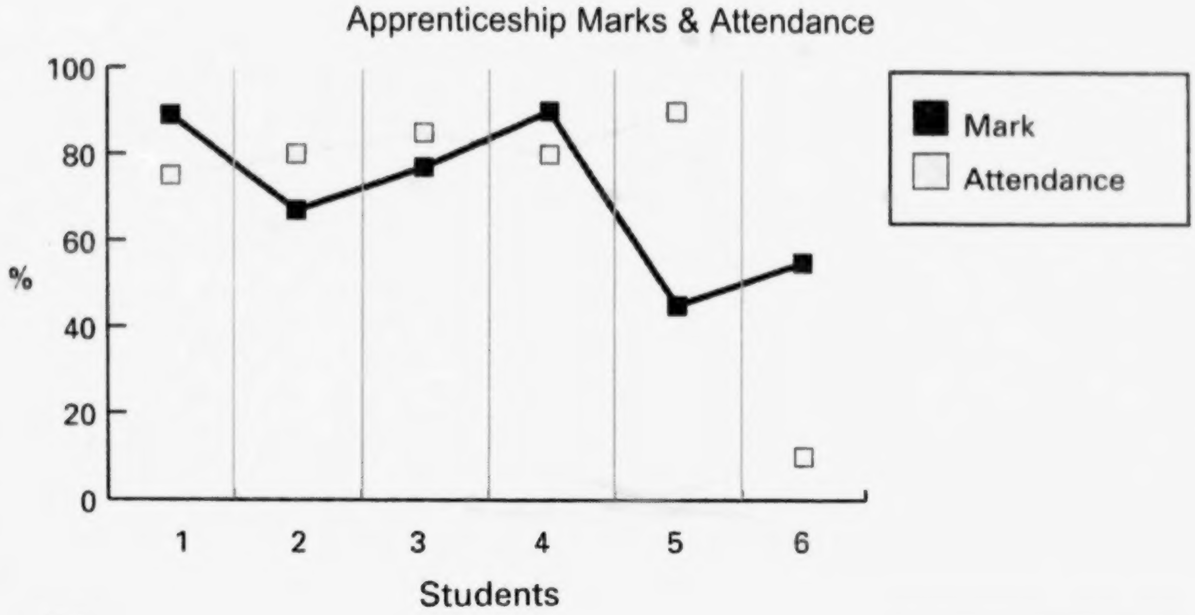


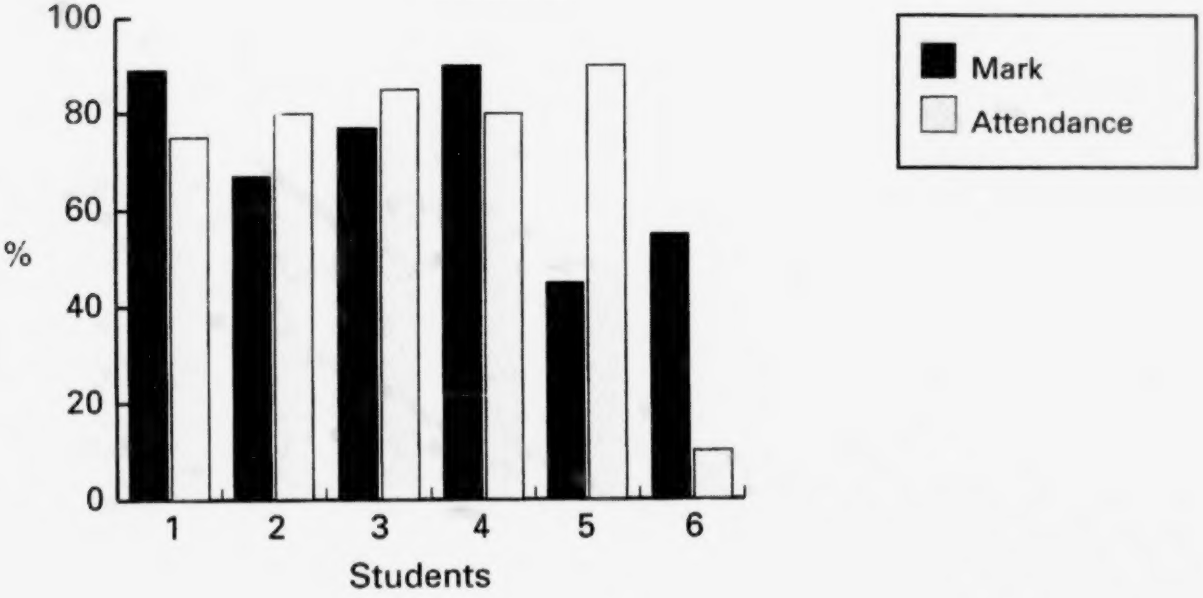
Source: Canadian Apprenticeship Forum, Skilled Trades Backgrounder, Aug 2004

AIR CONTAMINANT LIMIT

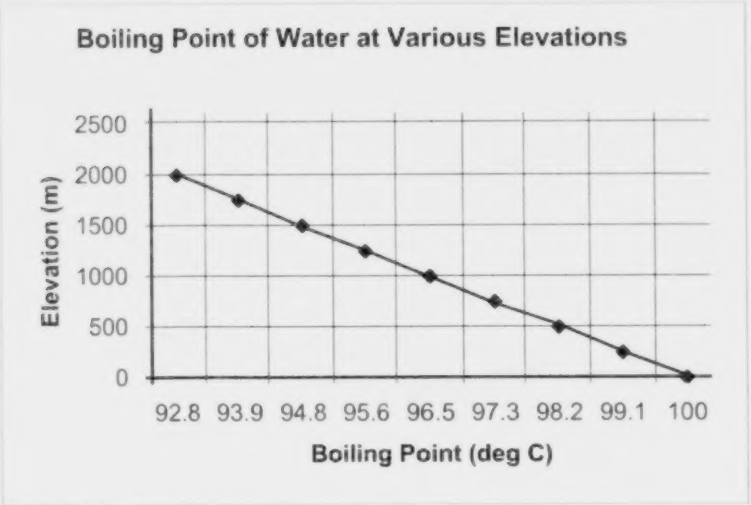


APPRENTICESHIP MARKS AND ATTENDANCE

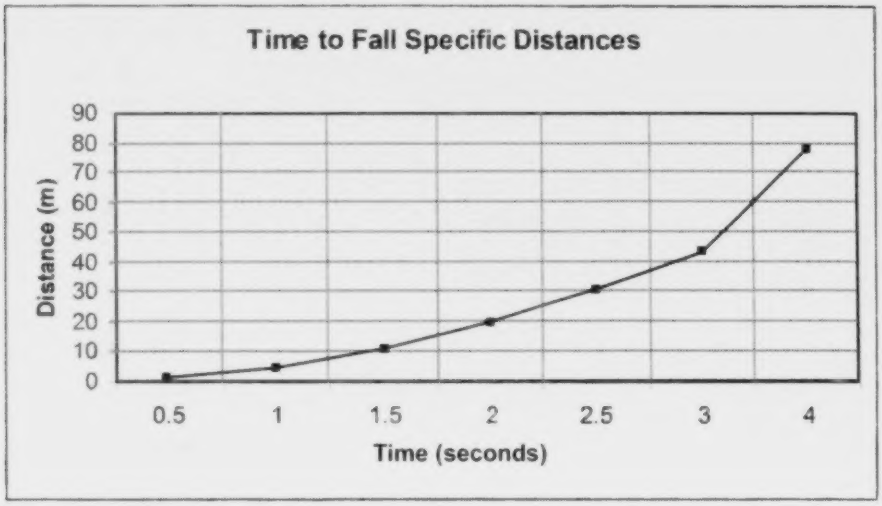




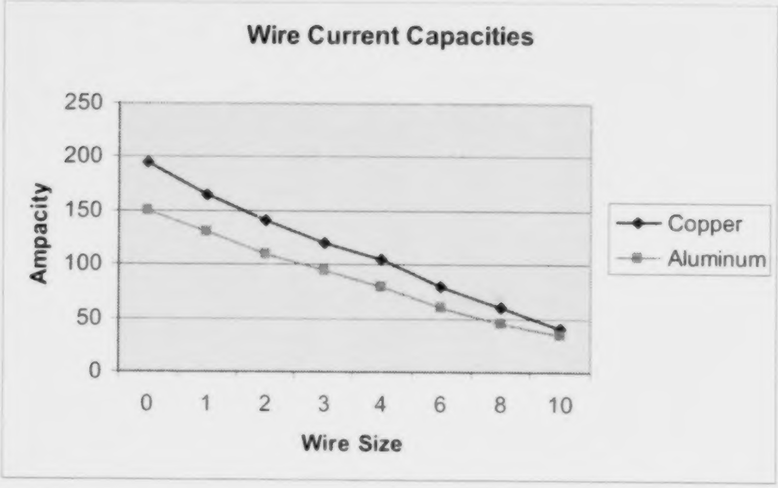
BOILING POINT OF WATER

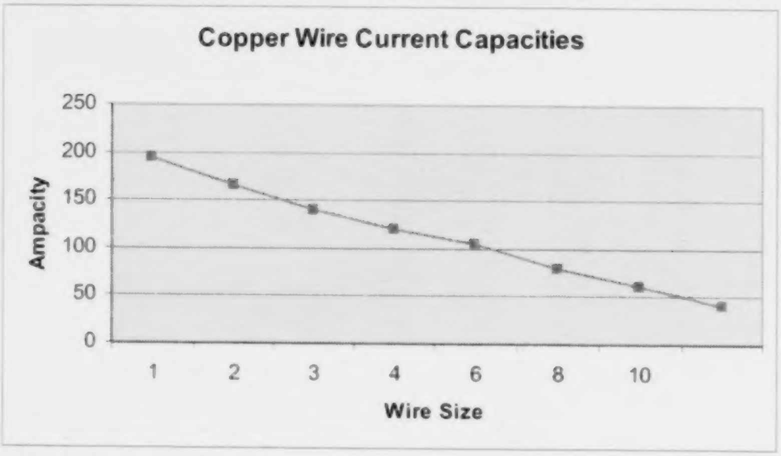


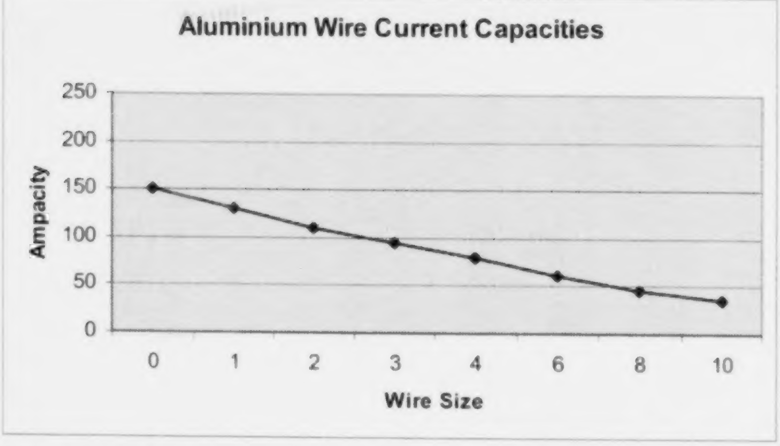
RATE OF FALL


Time to Fall Specific Distances
90
80
70
60
50
40
30
20
10
0
Distance (m)
0.5
1
1.5
2
2.5
3
4
Time (seconds)

WIRE CURRENT CAPACITIES







Document Use Refresher For Apprentices

ACTIVITY WORKSHEETS

Module 4

Appendix 4B

COMPLEXITY CHART

Learner Worksheet

1. Review the sample documents provided.
2. Place documents on the Complexity Chart, according to how difficult they are to understand.
3. Keep this assignment as it will be used in future modules.

Easy to understand *(Concrete)* ←→ **Difficult to understand *(Abstract)***

COMPLEXITY CHART

Instructor Key

Rationale for exercise:

- Categorizing complexity of documents can be a good first step in understanding their structure
- This can be a tool to determine the learners' strengths and challenges

Instructions:

- Give the learner at least one sample document from each category (your own, theirs, or from module examples)
- Have the learner put the documents in order from least difficult to understand to most difficult to understand

When completed the learner should have placed their documents in roughly the following order.

Easy to understand *(Concrete)* ⟷ **Difficult to understand *(Abstract)***

(Pie Charts) (Bar Graph) (Line Graph)

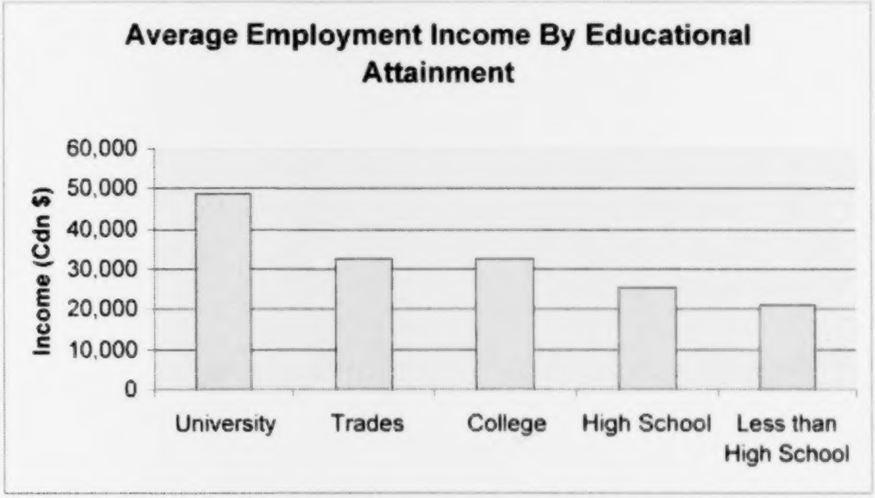
NOTES:

1. Within each category documents can vary in complexity
2. There could be various results with this exercise as learners bring with them knowledge from previous experience. If learners have worked with scale drawings they may determine these to be easier to understand. Use this as an opportunity to discuss their strengths and challenges.

FROM GRAPH TO INCOME:

Learner Worksheet

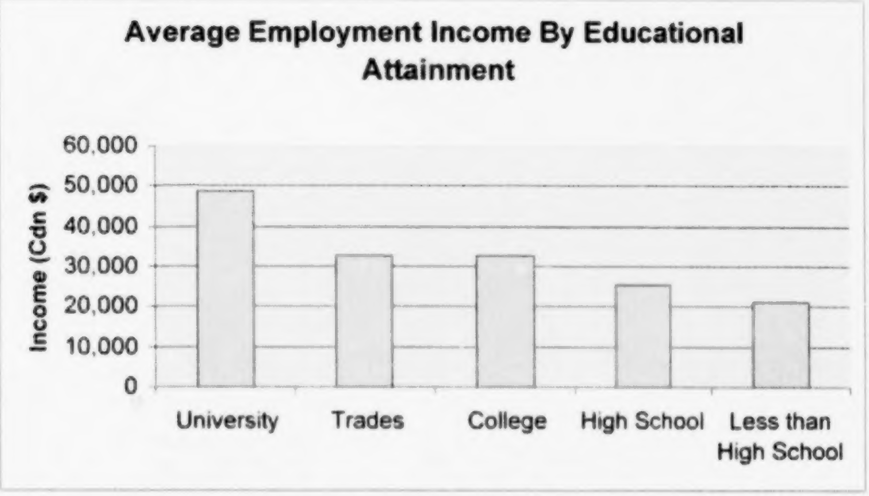
Examine the graph and create the lists of data used to create the graph.



Source: Canadian Apprenticeship Forum, Skilled Trades Backgrounder, Aug 2004

FROME GRAPH TO INCOME: APPENDIX 4B

Instructor Key



Source: Canadian Apprenticeship Forum, Skilled Trades Backgrounder, Aug 2004

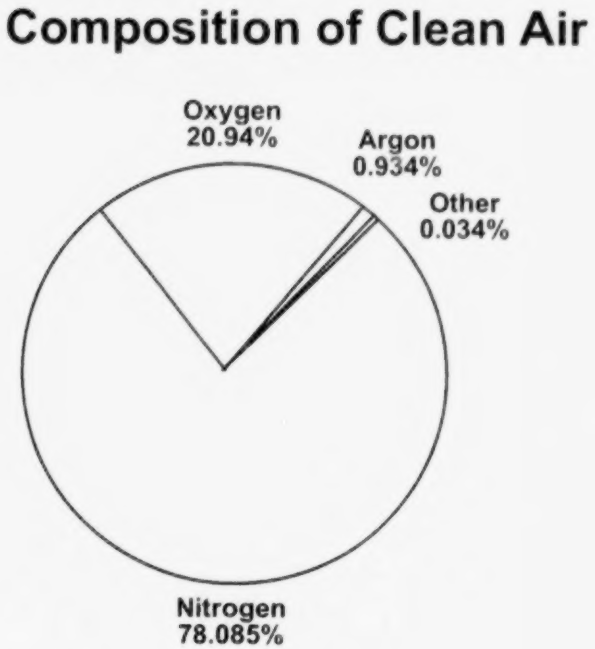
Students will have numbers close to those indicated here. If they vary widely you should ask them to show you how they read the graph.

Average Employment Income By Educational Attainment

Educational Attainment	Income (Cdn $)
University	48,000
Trades	32,000
College	32,000
High School	23,000
Less than High School	21,000

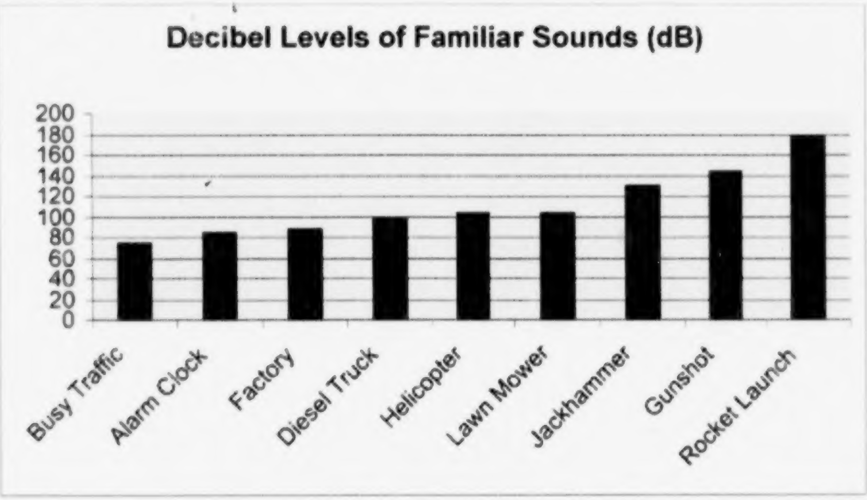
THE AIR WE BREATHE

1. Examine the pie graph.
2. List the components of clean air, from the largest percentage to the smallest percentage.
3. What is the specific percentage of oxygen required in clean air?



DECIBEL LEVELS

1. Examine the bar graph provided. What produces the highest decibel level? What is the rating in dB?
2. What produces the lowest decibel level? What is the rating in dB?
3. How many items exceed the pain threshold of 140 dB? List these items.



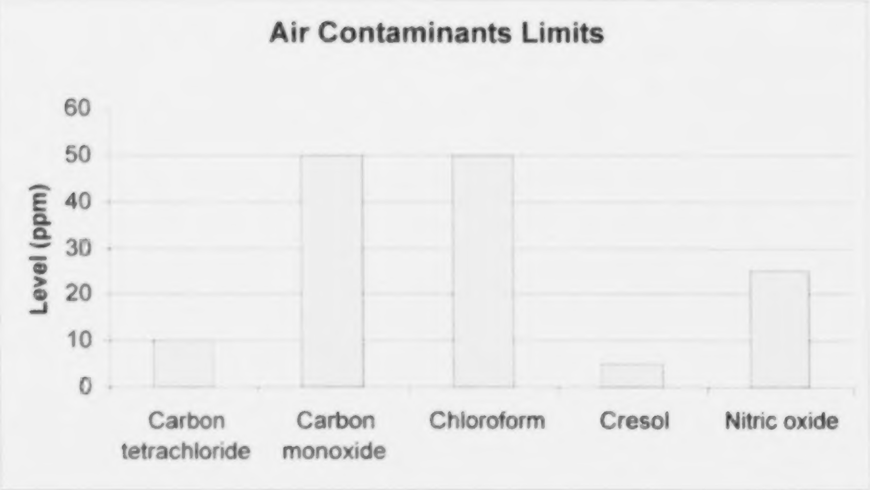
DATA HUNT

Answer the following questions using three sample graphs:
Trade Income (page 159)
Boiling Point of Water (page 164)
Wire Current Capacities (page 166)

1. What were this tradesperson's average earnings in June?
2. In what months did this tradesperson make more than $5,000?
3. What is the ampacity of a size 8 copper wire?
4. If you require an ampacity of at least 100 amps, what size of wire can you use?
5. At zero elevation, water boils at 100C°. What is the boiling point at 1500 m elevation?
6. If your pot of water boils at 96.5C°, what is your elevation?

DANGEROUS AIR

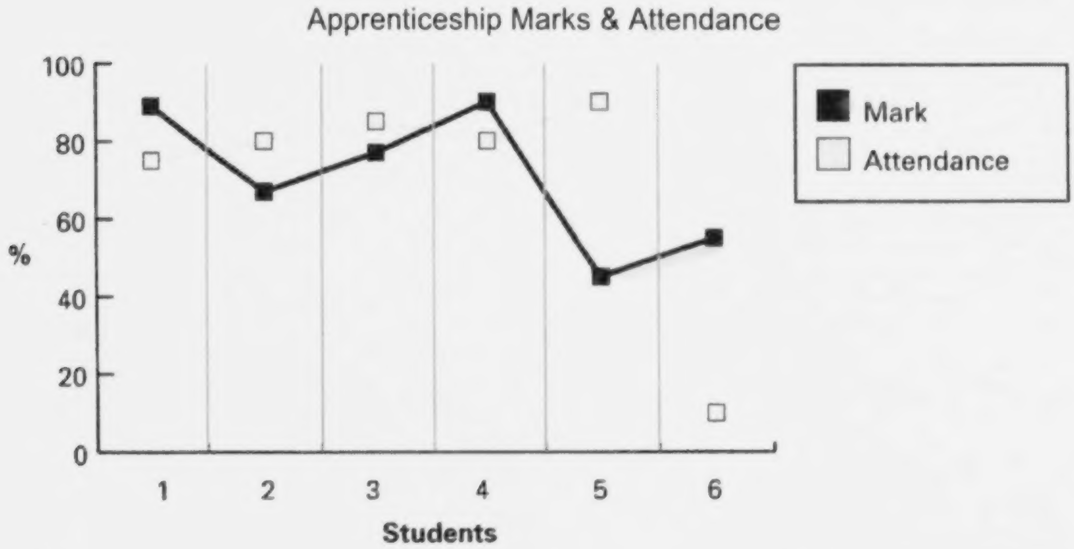
1. What is the scale of the Y axis?
2. Create a combined list from this graph, with the contaminants and their allowable levels
3. What contaminant is the most dangerous; that is, what contaminant can do the most damage in the smallest amount?

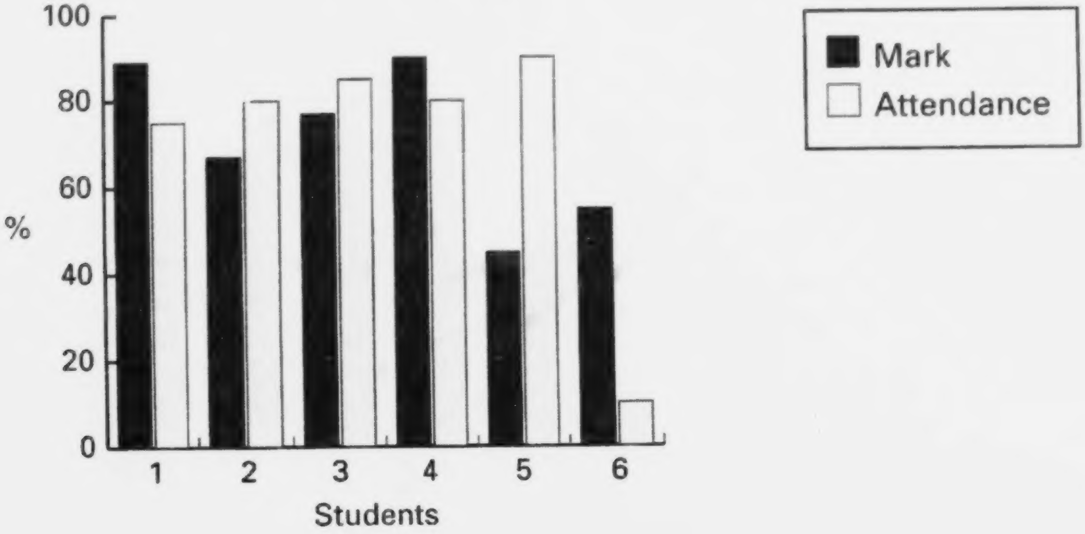


BAR OR LINE?

APPENDIX 4B

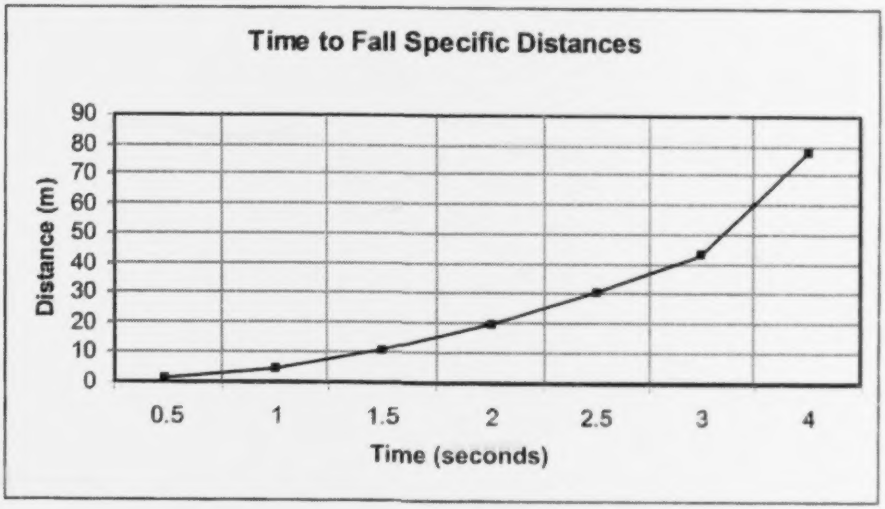
1. Using the bar graph, list the marks and attendance of students 3, 4, and 5.
2. Using the line graph, list the marks and attendance of students 1 and 6.
3. What general information can be gathered from the bar graph?
4. What general information can be gathered from the line graph?
5. Are there any exceptions? Explain.


Apprenticeship Marks & Attendance



THE PULL OF GRAVITY

1. How far, in metres, would a worker fall in two seconds? In three seconds?
2. Does distance double with time, or is there another relationship?
3. What trend does the line graph show?



Document Use
Refresher
For Apprentices

PROCESS CHARTS

Module 5

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

nscc

Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

INTRODUCTION

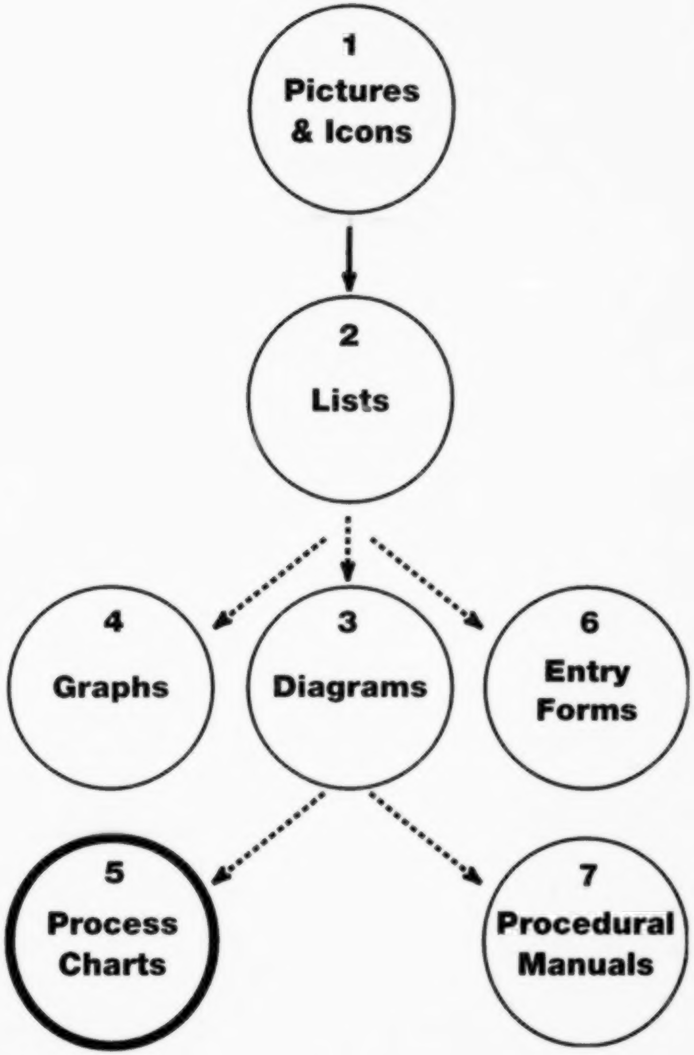
This module contains teaching and learning strategies applicable to all levels of document use, from the simple to the complex. It is understood that some modules may need to be shortened or eliminated to meet time restrictions or student requirements. This module should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams*, *Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete Module 3: Diagrams before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learning activities, sample documents, and activity worksheets. Please note, and reassure your learners, that the activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define process charts as visual organizers of workplace information

Identify the presence of and uses of single-process flow charts and multi-process flow charts in a variety of trade-related workplace documents

Demonstrate their knowledge of the structure of single-process flowcharts and multi-process flowcharts to locate information

Apply knowledge of process charts to workplace documents.

To the Instructor...

Recommended Prerequisites:

- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent
- Module 1: Pictures and Icons, Document Use Refresher for Apprentices
- Module 2: Lists, Document Use Refresher for Apprentices
- Module 3: Diagrams, Document Use Refresher for Apprentices

Instructor Materials:

- Module 5 teaching resources, including sample documents and activity worksheets
- Optional: flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

MODULE CONTENTS

PROCESS CHARTS

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TYPES AND PURPOSES

Process charts, also known as flow charts, are used throughout the trades to illustrate a process or procedure. This topic builds upon skills learned in Module 1: Pictures and Icons, Module 2: Lists and Module 3: Diagrams to demonstrate how process charts can be used to locate information quickly and accurately.

Strategies for Instruction

- Introduce the term process chart. Explain that this term includes flow charts and other illustrations that use icons, arrows, and labels to demonstrate physical systems such as water or electrical flow – and mental processes, such as decision-making, management structure, quality control, or training systems.

- Reinforce that a process chart is a map, providing a choice of directions depending on where you need to go and what tasks you need to complete along the way.

- Refresh information covered to date. Review how basic elements of all documents, from the simple to the complex, are built of pictures, icons and lists. Present *From Process Chart to List (page 192)*, first seen in Module 2:Lists. Explain how using and understanding process charts is made easier by knowing the information required, examining the pictures, identifying the label and lists, and using the legends and other supporting information.

- Introduce various types of process charts, including *Kiln Process Chart (page 193)*, *Test Preparation Process Chart (page 194)*, *Fuel Refinement Process Chart (page 195)*, *Construction Schedule (page 196)*, and *Quality Plan Process Chart (page 197)*. Explain how each is similar, using icons, labels, and lines for direction. Point out how they combine visual cues and text to share information.

- Gain feedback on types of process charts your learners use or have seen. Discuss challenges of using them such as unfamiliar icons, number of elements, abstraction, etc. Encourage learners to bring samples to share. Present your samples and share your experience where possible.

Supporting Documents

Process to List (page 192)

Kiln Process Chart (page 193)

Test Preparation (page 194)

Fuel Refinement (page 195)

Construction (page 196)

Quality Plan (page 197)

- Affirm that process charts are used to efficiently show a path or direction, or to serve as a reference. Point out that identifying the icons and lists is key to unlocking the information in process charts. Present *Basic Process Chart Icons (page 198)*. Discuss how these icons can provide information at a glance, without words.

- As a demonstration, present steps for *Writing a Process Paragraph (page 199)*. Point out how the paragraph describes the written version of a process chart. Compare the steps in the paragraph to the process chart samples. Discuss which could be easier and faster to use: a paragraph that must be read or a chart that uses icons to replace several words.

- Empathize with challenges. Process charts may be overwhelming at first glance.

- Reinforce the pattern to using process charts:
    - Know the information required.
    - Identify the label to know the information the chart can provide.
    - Locate legends to aid with icons and abbreviations.
    - Follow arrows and any directions attached to the icons to obtain information or complete tasks.

Supporting Documents

Basic Process Chart (page 198)

Writing the Process (page 199)

Activities

Trading Lists

1. Revisit the list created by learners in Module 2: Lists, recording the steps they have taken to earn their trade designation.
2. Have learners rewrite their lists in vertical order, with three spaces between each item.
3. Draw arrows to connect the order in which the steps should be completed.
4. Even if the flow is exactly top to bottom, point out that their creation is a process chart.
5. Reinforce the connection between an ordered list (words) and a process chart (icons and arrows).

Instructions for Replacement Staff

Use this assignment as a group activity, either for the class as a whole or for smaller groups within the class.

Present this scenario to the group or groups. You have been granted a two-week vacation and must leave instructions for your replacement. Have learners list the important tasks that their replacement must complete. Review with the learners the sequence of events. Have learners save this list, as it is revisited in Additional Learning Activities.

SINGLE-PROCESS FLOW CHARTS

Single-process flow charts use a simple list, icons, and arrows to show a specific task. This topic increases familiarity with single-process charts in preparation for more complex documents.

Strategies for Instruction

- Review the basics of process charts, which are ordered lists with icons and arrows to show direction of a physical or mental flow. Revisit some uses for process charts, such as equipment assembly, installation or repair, construction or renovation scheduling, quality control, management structure, and problem-solving.

- Revisit *Basic Process Chart Icons (page 198)*, emphasizing that an icon replaces a command or description. For example, a rectangle means action or step, a diamond may mean decision point – a place where you ask a question and choose a direction based on the answer. Demonstrate with the *Test Preparation Process Chart (page 194)*.

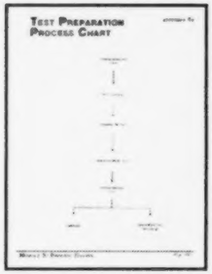
- Reinforce the similarity between a process chart and a map. Icons and arrows in a process chart show options and direction, just as icons and roads do on a map. Choices depend on the destination and tasks needing to be accomplished along the way.

- Point out the difference in line styles that can occur. As a road map uses solid lines for paved roads and dotted lines for unpaved routes, a flow chart can use solid lines for direct processes, and dotted lines for indirect processes. Demonstrate with the *Construction Schedule (page 196)*.

- Empathize with the confusion that can arise from icons. There are many sets of process chart icons; as a result, a single icon can have several meanings. Explain that some process charts contain a legend to ensure icon meaning is understood. Some process chart icons contain descriptions; use *Process Approach: Sales, Purchasing, Receiving and Production (Page 200)* as an example.

Supporting Documents

Basic Process Chart (page 198)



Test Preparation (Page 194)

Construction (page 196)

Process Approach (Page 200)

Activities

Safe Lifting

Learner Worksheet (page 206)

This activity includes a series of pictures demonstrating how to safely lift a heavy load. Learners are asked to replace the images with brief descriptions and to replace the numbers with arrows showing the order in which each action should occur.

Once the worksheet is completed, point out that the final product is a process chart.

Activity Worksheets

Safe Lifting

Safe Lifting (p206)

MULTI-PROCESS FLOW CHARTS

Multi-process flow charts can be the most complex of process charts because of the large number of icons, lines and arrows. This topic builds upon the previous instructions, showing that multi-process charts are a series of related single-process charts.

Strategies for Instruction

- Review the basics of process charts. Process charts are ordered lists with icons and arrows to show the order in which tasks should be completed. Point out that every action is a series of events, and a process chart lists those events. Revisit the road map comparison, how in process charts there are intersections for decision points, whereas in maps arrows and signs show the way.

- Introduce multi-process flow charts. Explain that multi-process flow charts are a combined series of related single-process flow charts, just as a combined list is a series of simple lists.

- For example, present the four individual *Process Approach Documents: Sales, Purchasing, Receiving and Production (pages 201 through 204)*. Each is a single chart derived from *Process Approach (page 200)*.
  HINT: the four single charts, if copied on overhead sheets, can be overlaid to form the multi-process chart.

- Demonstrate how the key to finding information quickly and accurately is to focus on the process required, tracing a path from point to point as if the chart were a map.

- Revisit the *Fuel Refinement Process Chart (page 195)*, *Construction Schedule (page 196)*, and *Quality Plan Process Chart (page 197)*. Reinforce the use of a process chart as a reference, a tool to be used for specific information rather than as an item to be read in its entirety.

Supporting Documents

Process Approach (pages 201-204)

Process Approach (page 200)

Fuel Refinement (page 195)

Construction (page 196)

Quality Plan (page 197)

- Point out that in a complex process chart only a portion of the chart may be required to complete the task. Use the *Construction Schedule (Page 196)* to demonstrate. Trace the differing paths followed by plumbers, electricians, and flooring installers. Repeat with the *Fuel Refinement (Page 195)* and *Quality Plan (Page 197)* to reinforce the pattern to find specific information.

- Emphasize that the purpose of process charts is to locate specific information. Reinforce the concept that to avoid being overwhelmed by complex flow charts, choose and follow a specific path. Point out that process charts contain specific pieces of information organized in a sequence of events. Using sample documents, practise finding and using specific information. Trace the path with a finger or pencil, following the directions encountered.

Supporting Documents

Construction (Page 196)

Fuel Refinement (Page 195)

Quality Plan (Page 197)

Activities

Process Separation

Learner Worksheet (page 207)

This worksheet includes the Quality Plan Process FlowChart. Learners use lines of a different colour or pattern (ie dotted, solid, broken) to circle the individual processes contained in the chart.

Reinforce how multi-process charts are a series of connected single-process charts.

How the Oil Flows

Learner Worksheet (page 208)

This activity includes the Fuel Refinement Process Chart and the following assignment:

1. List the steps in liquefied natural gas production, from well to export.
2. Redraw the chart showing just the oil export process.

Activity Worksheets

PROCESS SEPARATION

Process Separation (p207)

HOW THE OIL FLOWS

How the Oil Flows (p208)

ADDITIONAL LEARNING ACTIVITIES

After the Celebration

Learner Worksheet (page 209); Instructor Key (page 210)

Revisit the *Test Preparation Process Chart (page 194)*. Present this scenario: the celebration is over. What are the next steps? Draw them on the chart. Or, the library is closed. What now? Draw next steps on the chart.

Scheduling Lists

Learner Worksheet (page 211)

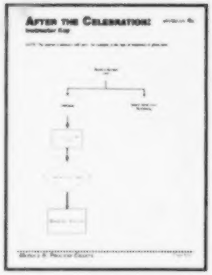
Using the Construction Schedule and asks learners to create a series of simple lists describing the tasks for each trade. The label for each list is the trade involved in the project, and the elements are each task to be completed by this trade. Reinforce the connection between the simple lists and the process chart.

Instructions for Replacement Staff Revisited

Have learners examine the sequence of events created in Instructions for Relief, the activity in the first topic. Ask them to create a process chart for their work replacement, using arrows for sequence and icons for decisions and actions (refer to *Basic Process Chart Icons (page 198)*, if necessary).

Activity Worksheets

After Celebration Learner (p209)



After Celebration Instructor (p210)

Scheduling Lists (p211)

Document Use Refresher For Apprentices

SUPPORTING DOCUMENTS

Module 5

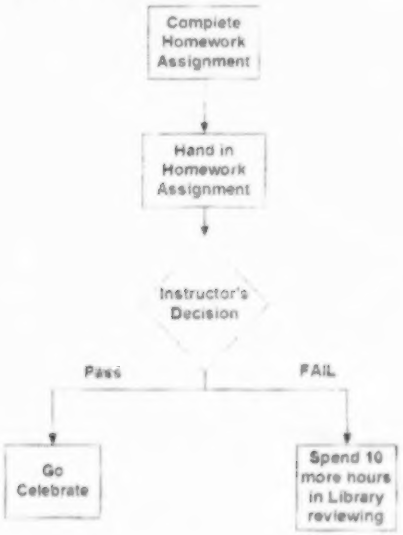
Appendix 5A

FROM PROCESS CHART TO LIST

A process chart is a series of icons layered with one or more lists.

The process chart:

Flow of Homework


Complete Homework Assignment
Hand in Homework Assignment
Instructor's Decision
Pass
FAIL
Go Celebrate
Spend 10 more hours in Library reviewing

The list:

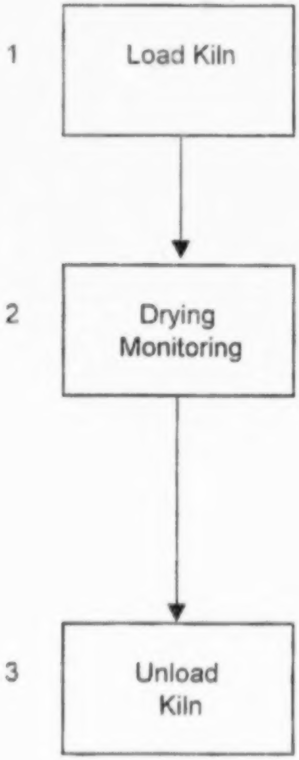
Flow of Homework

Complete Homework Assignment
Hand in Homework Assignment
Instructor's Decision

KILN PROCESS CHART

APPENDIX 5A

KILN
Process Flowchart

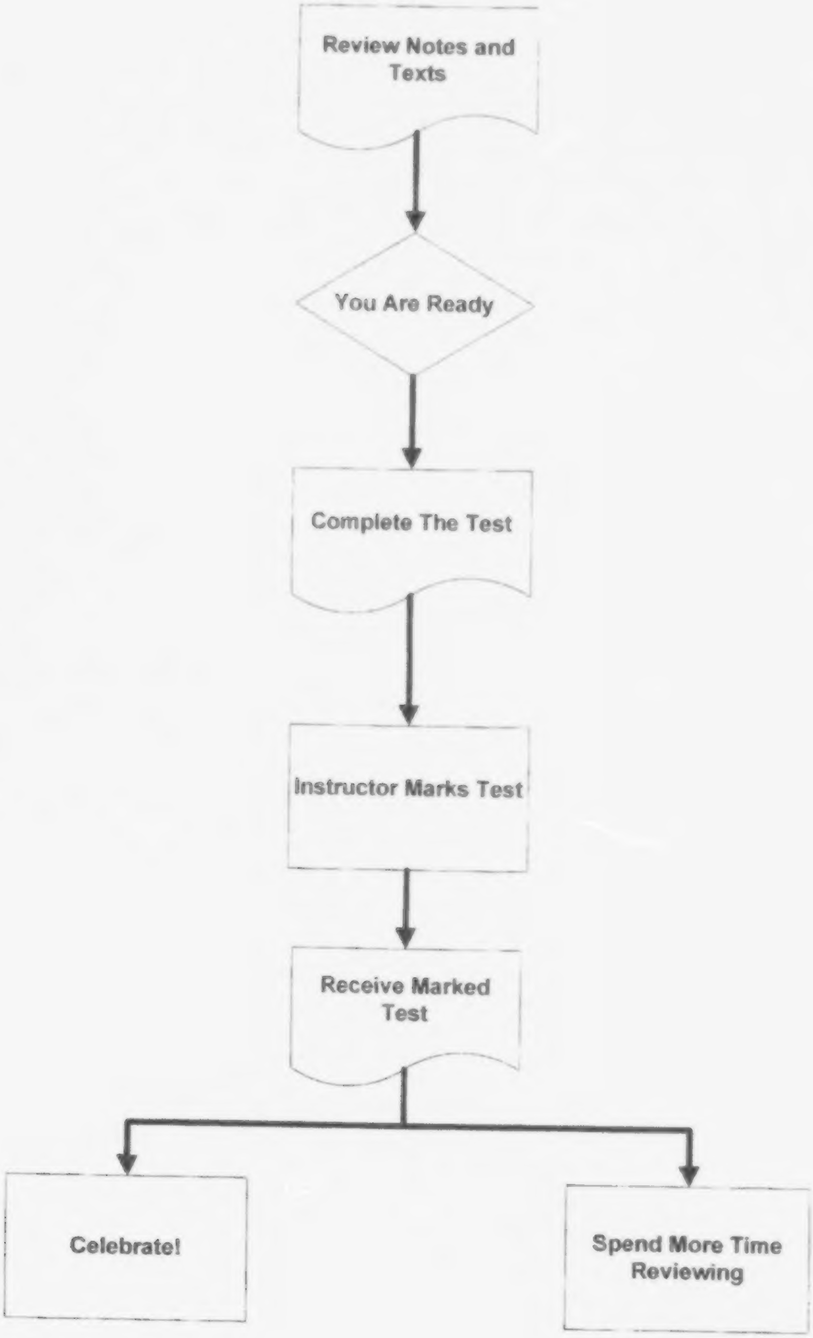


Forklift Operator
- Loads on the in-feed deck

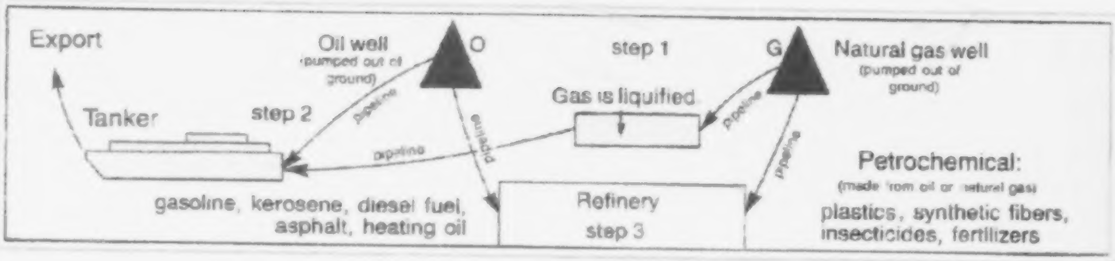
Kiln Operator
- check status of loads in kiln
    - monitor moisture content
    - move out when dry
- checks loading of trains (monitoring)
- select appropriate recipe - schedule
- monitor general operation of kiln (belts, vents)
- monitor fuel supply
- monitor boiler water - record daily in log book
- verifies equipment is in working order

Forklift Operator
- unloads on the out-feed deck

TEST PREPARATION PROCESS CHART

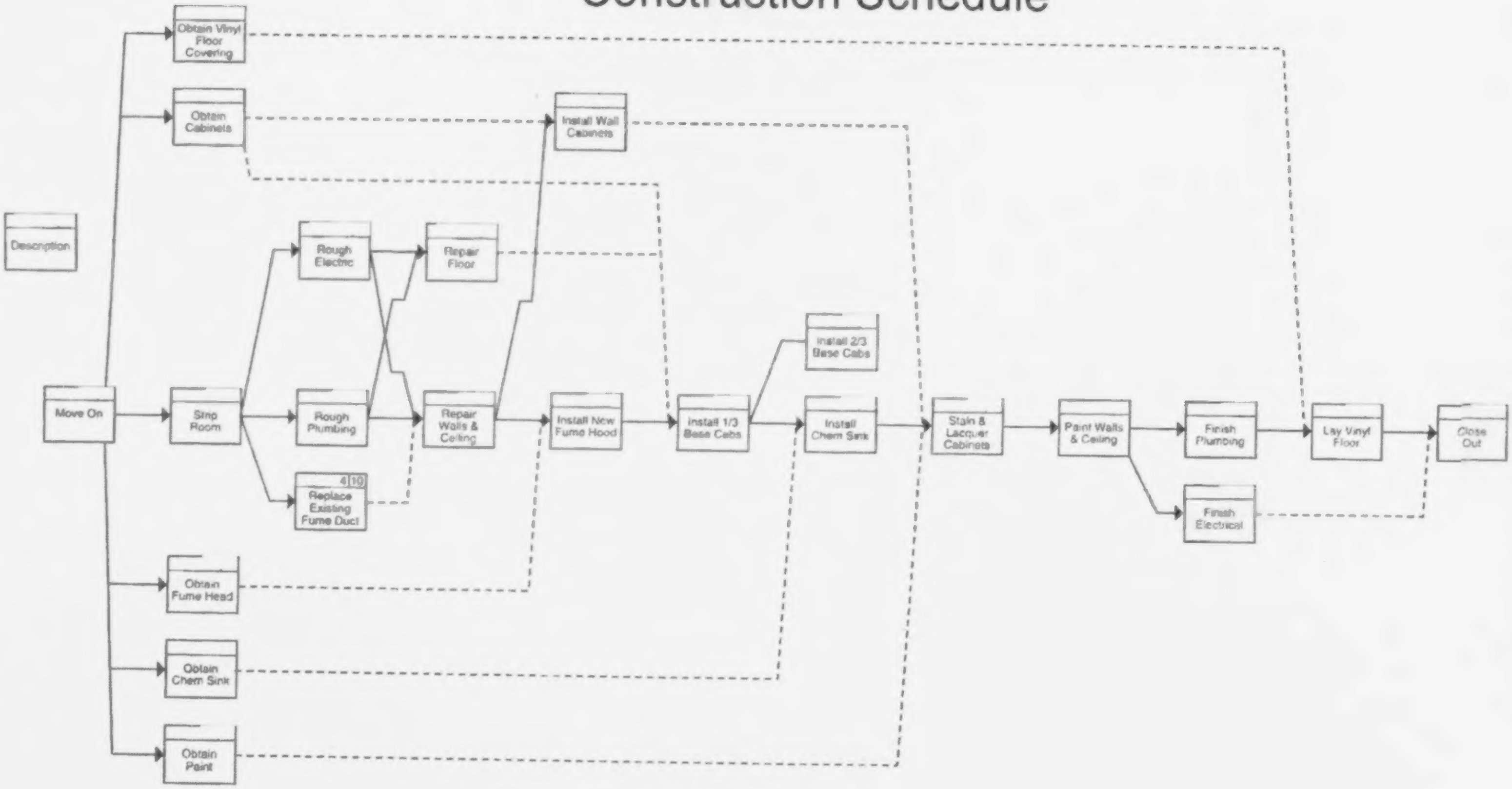

Review Notes and Texts
You Are Ready
Complete The Test
Instructor Marks Test
Receive Marked Test
Celebrate!
Spend More Time Reviewing

FUEL REFINEMENT PROCESS CHART

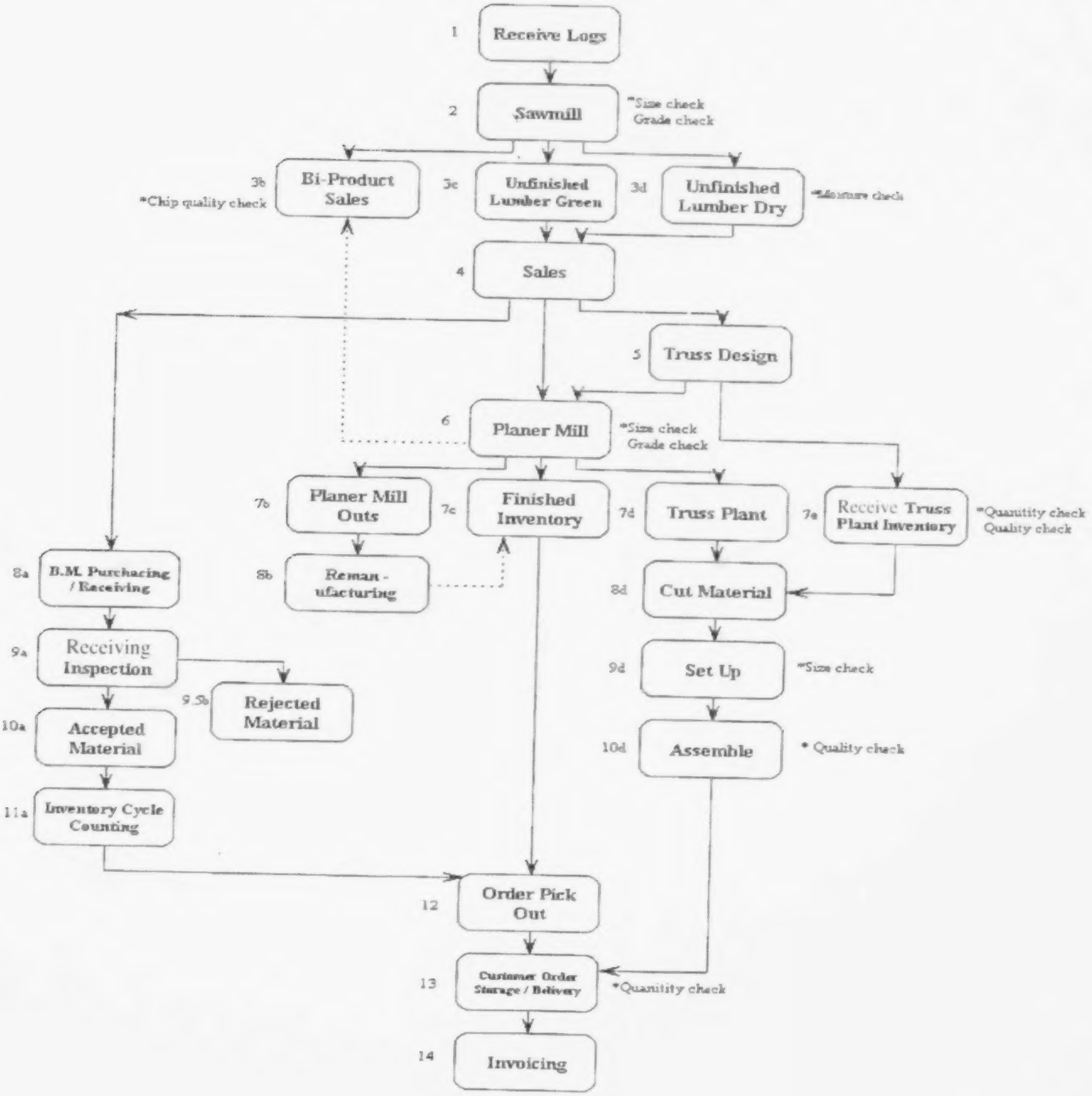

Export
Oil well
(pumped out of ground)
O
step 1
G
Natural gas well
(pumped out of ground)
Tanker
step 2
pipeline
Gas is liquified
pipeline
pipeline
pipeline
pipeline
Petrochemical:
(made from oil or natural gas)
gasoline, kerosene, diesel fuel, asphalt, heating oil
Refinery
step 3
plastics, synthetic fibers, insecticides, fertilizers

CONSTRUCTION SCHEDULE

Construction Schedule


Description
Move On
Obtain Vinyl Floor Covering
Obtain Cabinets
Strip Room
Obtain Fume Head
Obtain Chem Sink
Obtain Paint
Rough Electric
Rough Plumbing
4 10
Replace Existing Fume Duct
Repair Floor
Repair Walls & Ceiling
Install Wall Cabinets
Install New Fume Hood
Install 1/3 Base Cabs
Install 2/3 Base Cabs
Install Chem Sink
Stain & Lacquer Cabinets
Paint Walls & Ceiling
Finish Plumbing
Finish Electrical
Lay Vinyl Floor
Close Out

QUALITY PLAN PROCESS CHART


1
Receive Logs
2
Sawmill
*Size check
Grade check
3b
Bi-Product Sales
*Chip quality check
3c
Unfinished Lumber Green
3d
Unfinished Lumber Dry
*Moisture check
4
Sales
5
Truss Design
6
Planer Mill
*Size check
Grade check
7b
Planer Mill Outs
7c
Finished Inventory
7d
Truss Plant
7e
Receive Truss Plant Inventory
*Quantity check
Quality check
8a
B.M. Purchacing / Receiving
8b
Reman-ufacturing
8d
Cut Material
9a
Receiving Inspection
9.5b
Rejected Material
9d
Set Up
*Size check
10a
Accepted Material
10d
Assemble
* Quality check
11a
Inventory Cycle Counting
12
Order Pick Out
13
Customer Order Storage / Delivery
*Quanitity check
14
Invoicing

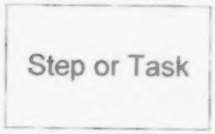
BASIC PROCESS CHART ICONS

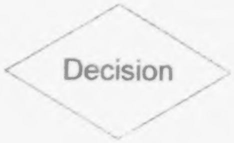
APPENDIX 5A

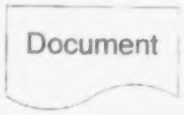
The basic shapes used are:

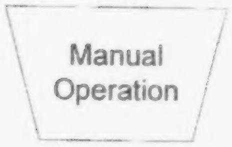
- Diamond - decision point in the process
- Rectangle – a procedure or process
- Lines and arrows - the flow of the steps in the process

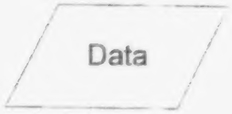
The following symbols are often seen in industry applications.

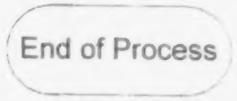

Step or Task

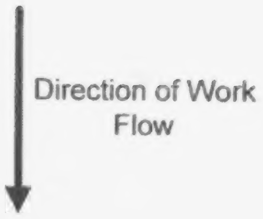


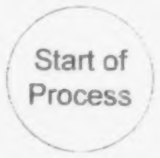



Manual
Operation



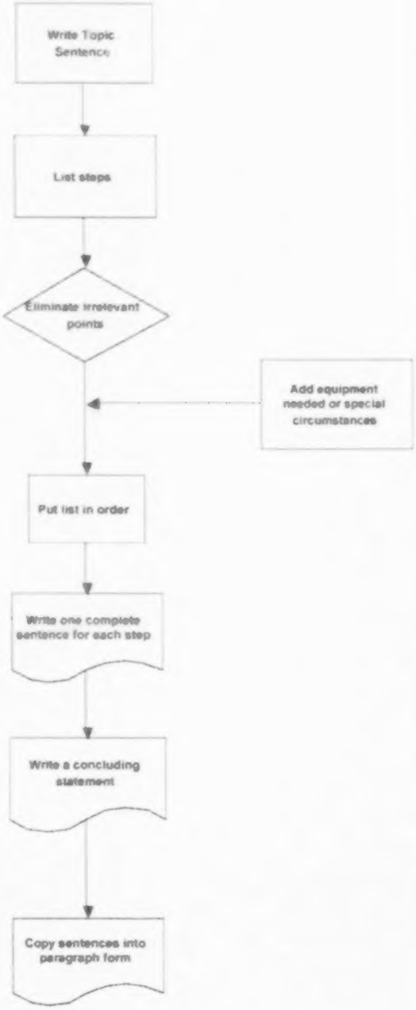

End of Process


Direction of Work
Flow


Start of
Process

STEPS FOR WRITING A PROCESS PARAGRAPH

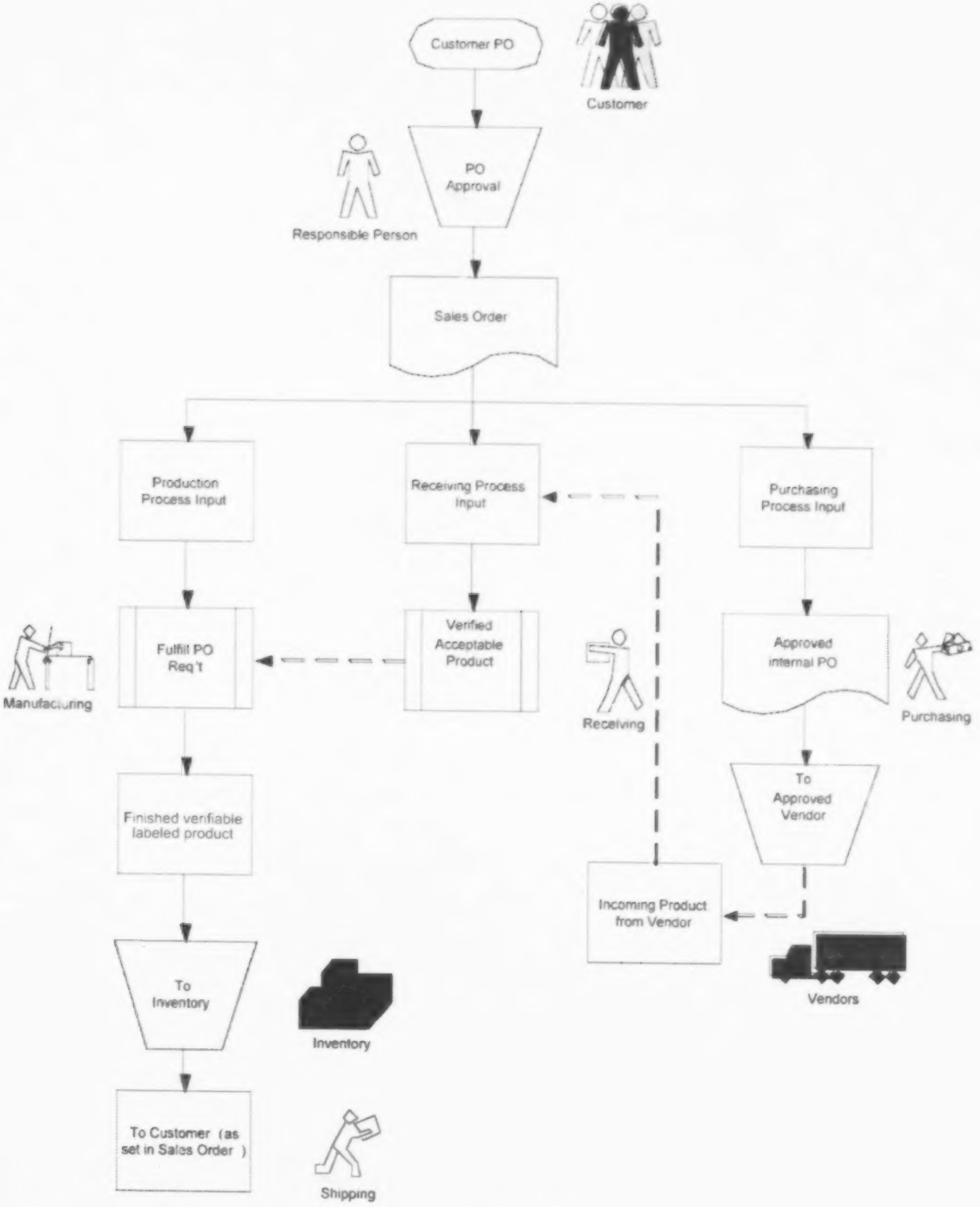
Here is an example of how this process can work:

In words	As Flowchart
First, write the topic sentence: a sentence that summarizes the information to follow. Then, list each of the steps included in the process. Now, review those steps, and remove any that are not essential to the description of the process. Also, add to the list any equipment or other special needs to complete the process. Put the list in order. Go back to your list, and write a complete sentence for each item on the list. Then, write a concluding statement to summarize the process you have described and to request any action. To finish, copy your sentences into paragraph form.	Steps for Writing a Process Paragraph 

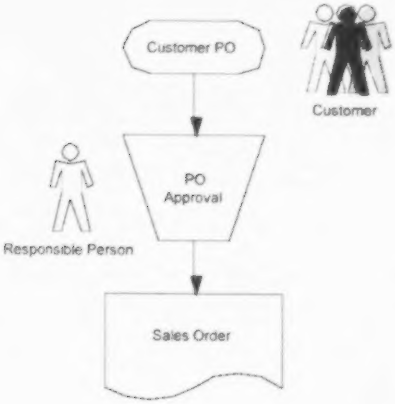
Write Topic Sentence
List steps
Eliminate irrelevant points
Add equipment needed or special circumstances
Put list in order
Write one complete sentence for each step
Write a concluding statement
Copy sentences into paragraph form

PROCESS APPROACH:

Sales, Purchasing, Receiving and Production


Customer PO
Customer
PO Approval
Responsible Person
Sales Order
Production Process Input
Receiving Process Input
Purchasing Process Input
Fulfill PO Req't
Manufacturing
Verified Acceptable Product
Receiving
Approved internal PO
Purchasing
To Approved Vendor
Finished verifiable labeled product
Incoming Product from Vendor
Vendors
To Inventory
Inventory
To Customer (as set in Sales Order)
Shipping

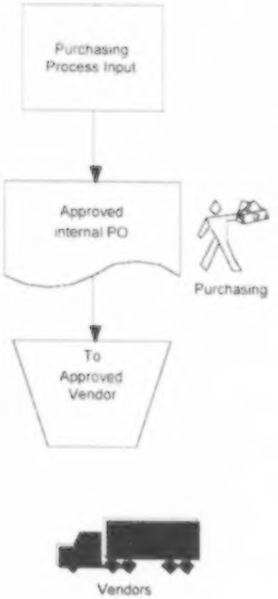
PROCESS APPROACH:
SALES


Customer PO
Customer
PO
Approval
Responsible Person
Sales Order

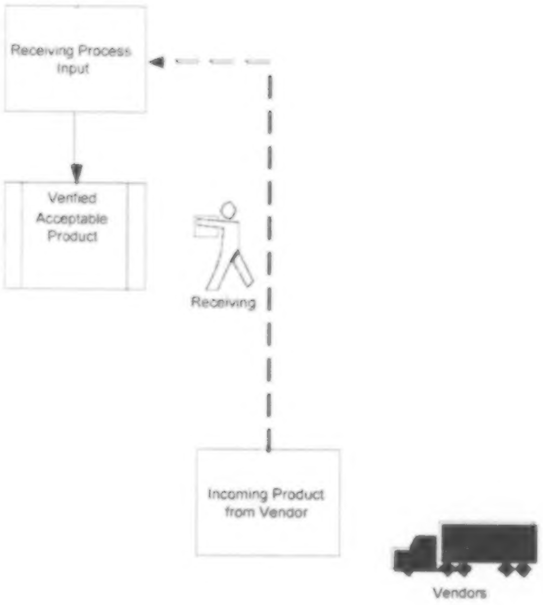
PROCESS APPROACH:

PURCHASING

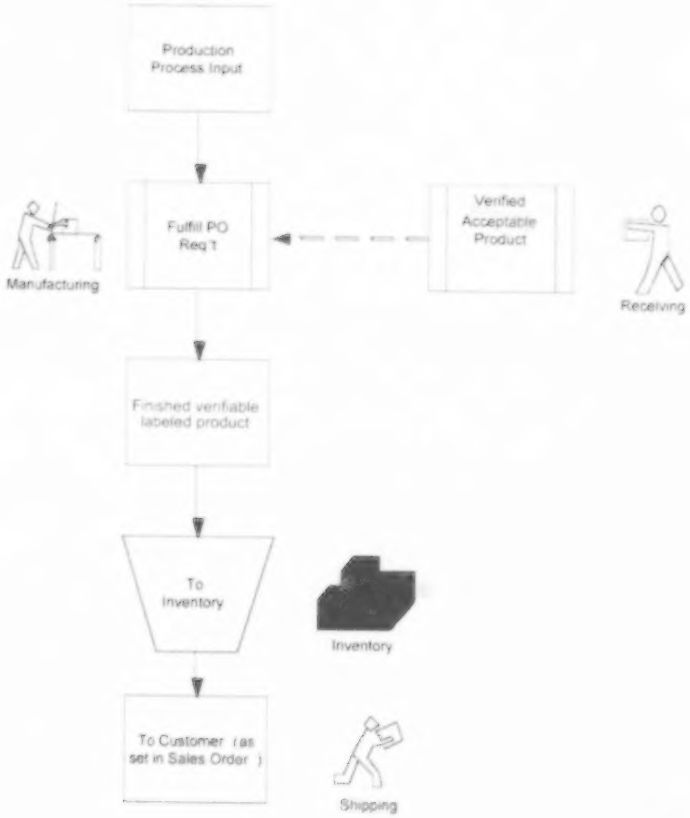
APPENDIX 5A


Purchasing Process Input
Approved internal PO
Purchasing
To Approved Vendor
Vendors

PROCESS APPROACH:
RECEIVING


Receiving Process Input
Verified Acceptable Product
Receiving
Incoming Product from Vendor
Vendors

PROCESS APPROACH:
PRODUCTION


Production Process Input
Fulfill PO Req't
Manufacturing
Verified Acceptable Product
Receiving
Finished verifiable labeled product
To Inventory
Inventory
To Customer (as set in Sales Order)
Shipping

Document Use
Refresher
For Apprentices

ACTIVITY WORKSHEETS

Module 5

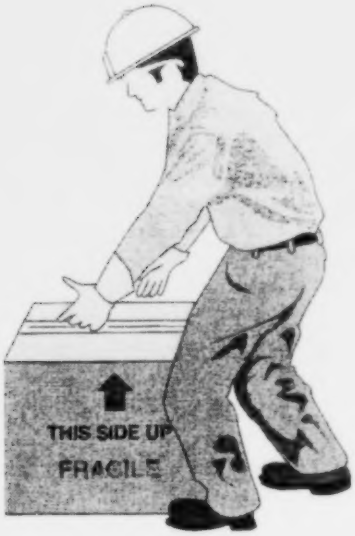
Appendix 5B

SAFE LIFTING

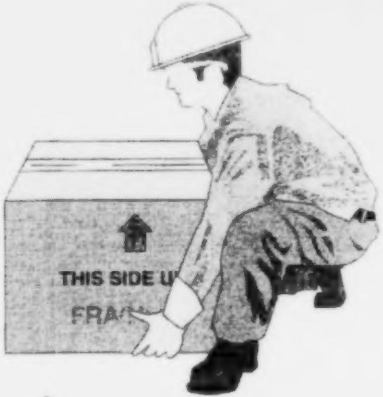
APPENDIX 5B

Learner Worksheet

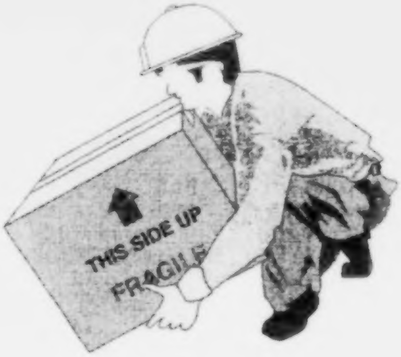
Replace the images with brief descriptions, and replace the numbers with arrows showing the order in which each action should occur.


THIS SIDE UP
FRAGILE

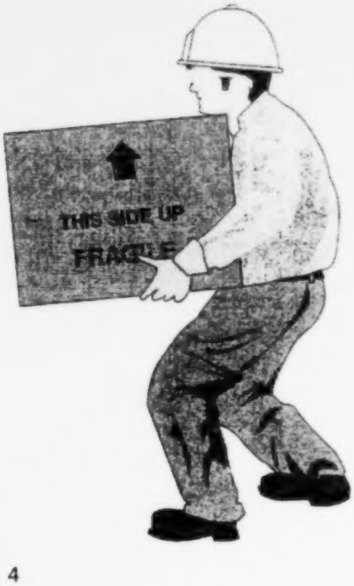
1


THIS SIDE UP
FRAGILE

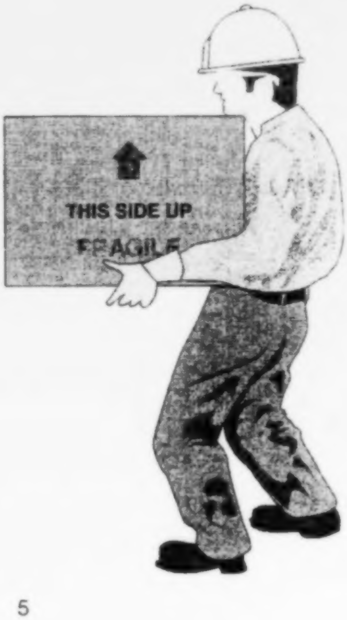
2


THIS SIDE UP
FRAGILE

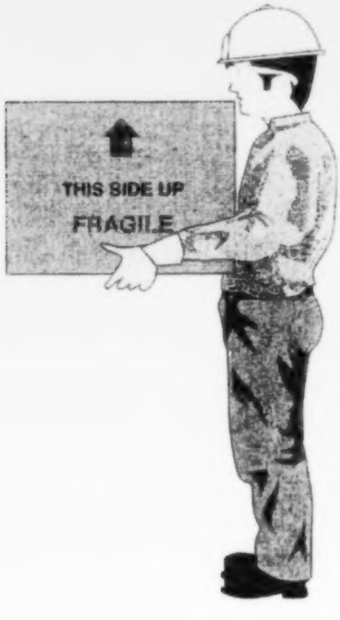
3


THIS SIDE UP
FRAGILE

4


THIS SIDE UP
FRAGILE

5


THIS SIDE UP
FRAGILE

6

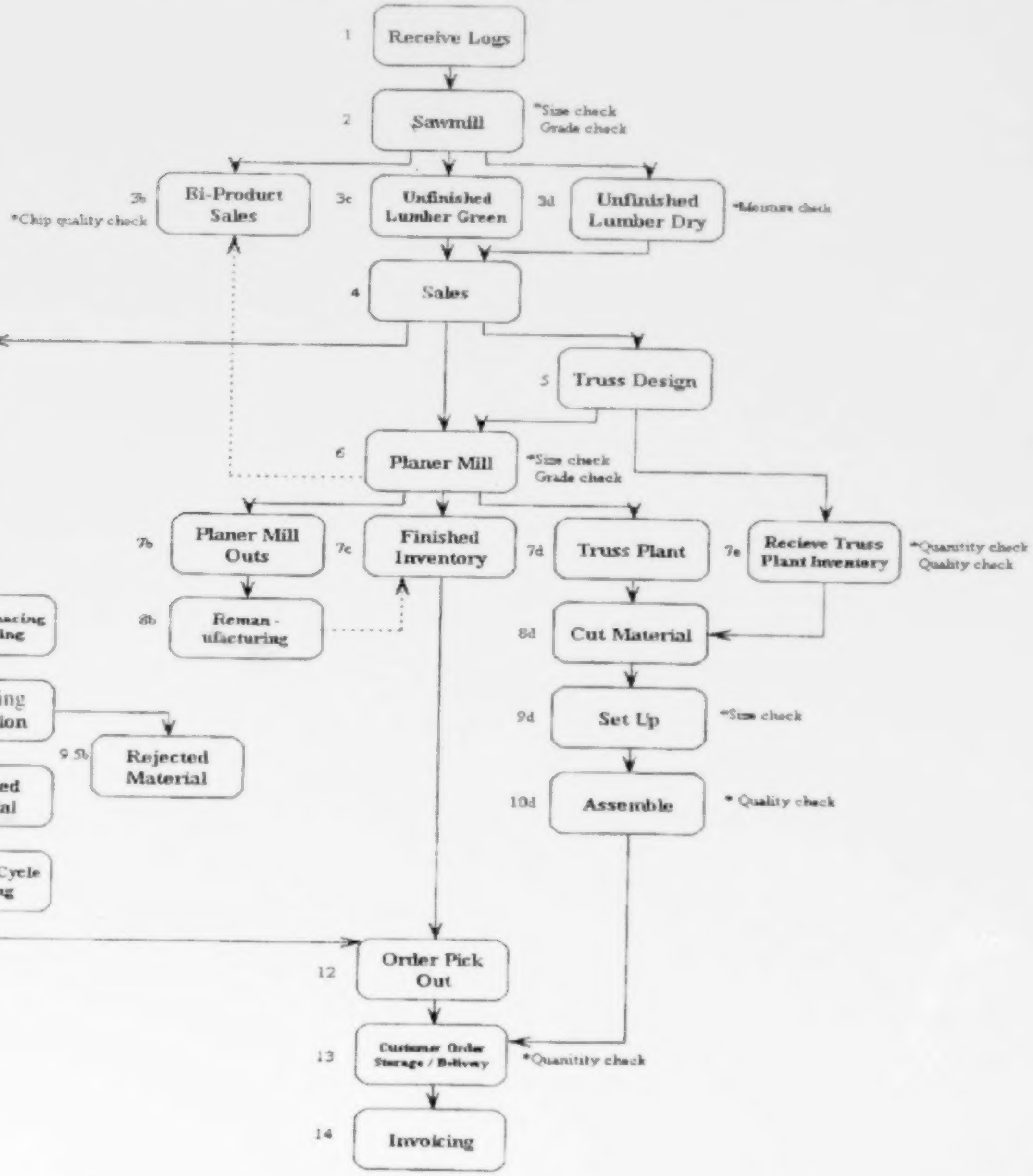
PROCESS SEPARATION

APPENDIX 5B

Learner Worksheet

Use lines of a different color or pattern *(ie dotted, solid, broken)* to circle the individual processes contained in the chart.

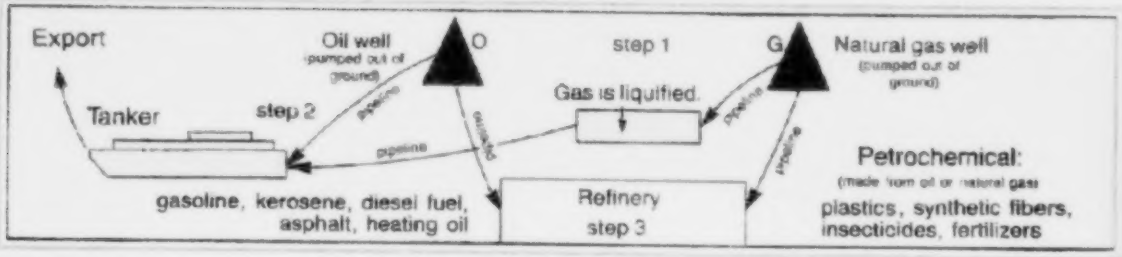
Quality Plan Process Flowchart


1
Receive Logs
2
Sawmill
*Size check
Grade check
3b
Bi-Product Sales
*Chip quality check
3c
Unfinished Lumber Green
3d
Unfinished Lumber Dry
*Moisture check
4
Sales
5
Truss Design
6
Planer Mill
*Size check
Grade check
7b
Planer Mill Outs
7c
Finished Inventory
7d
Truss Plant
7e
Recieve Truss Plant Inventory
*Quantity check
Quality check
8a
B.M. Purchacing / Receiving
8b
Reman - ufacturing
8d
Cut Material
9a
Receiving Inspection
9 5b
Rejected Material
9d
Set Up
*Size check
10a
Accepted Material
10d
Assemble
* Quality check
11a
Inventory Cycle Counting
12
Order Pick Out
13
Customer Order Storage / Delivery
*Quanitity check
14
Invoicing

HOW THE OIL FLOWS

Learner Worksheet

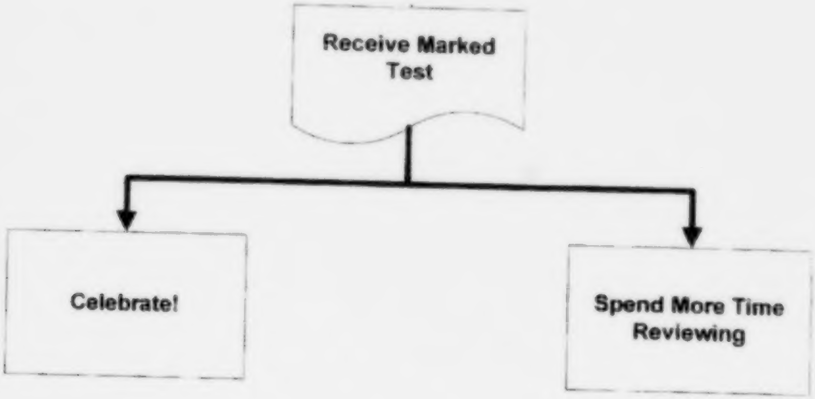
1. List the steps in liquefied natural gas production, from well to export.
2. Redraw the chart showing just the oil export process.


Export
Oil well
(pumped out of ground)
O
step 1
G
Natural gas well
(pumped out of ground)
Tanker
step 2
pipeline
Gas is liquified.
pipeline
pipeline
pipeline
pipeline
Petrochemical:
(made from oil or natural gas)
gasoline, kerosene, diesel fuel, asphalt, heating oil
Refinery
step 3
plastics, synthetic fibers, insecticides, fertilizers

AFTER THE CELEBRATION:

Learner Worksheet

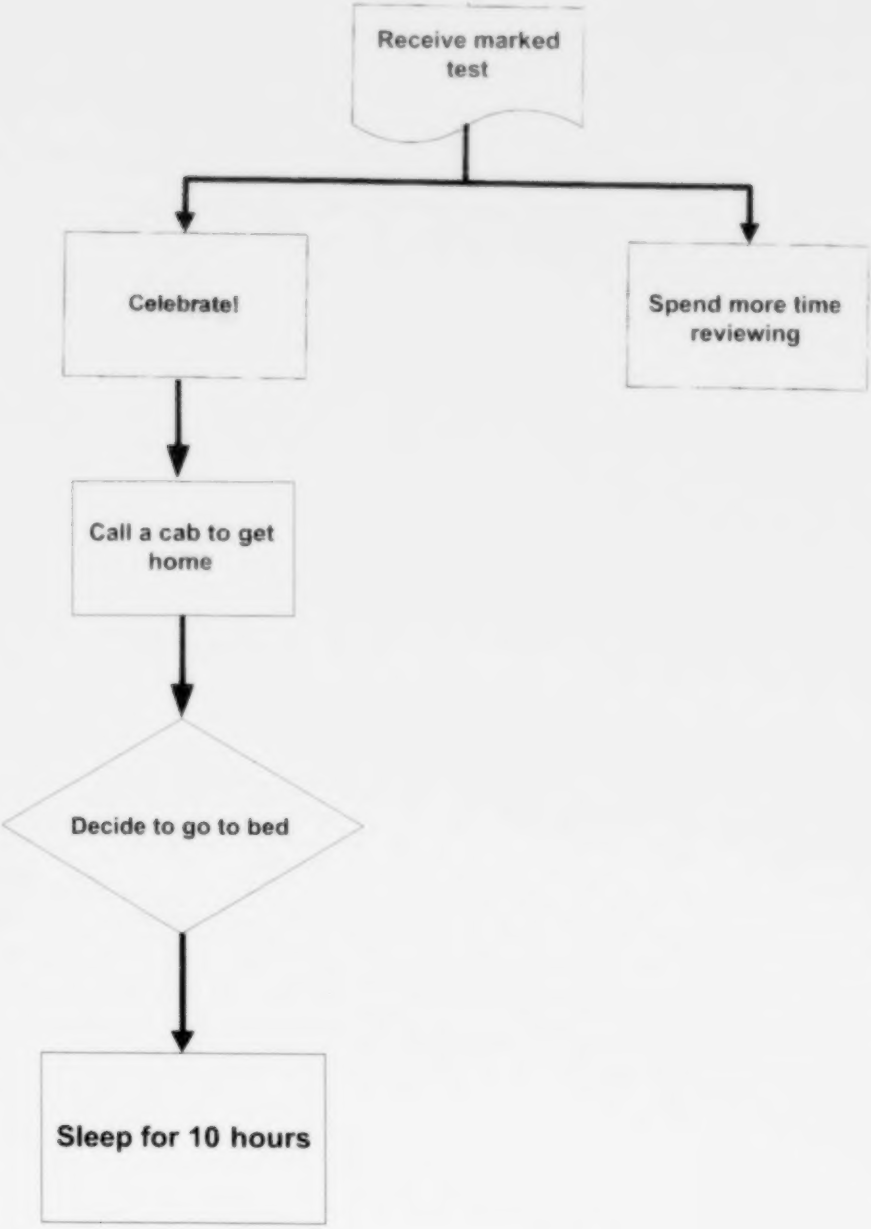
Revisit the *Test Preparation Process Chart (page 194)*. Present this scenario: the celebration is over. What are the next steps? Draw them onto the chart. Or, the library is closed. What now? Draw it on the chart.


Receive Marked Test
Celebrate!
Spend More Time Reviewing

AFTER THE CELEBRATION:

Instructor Key

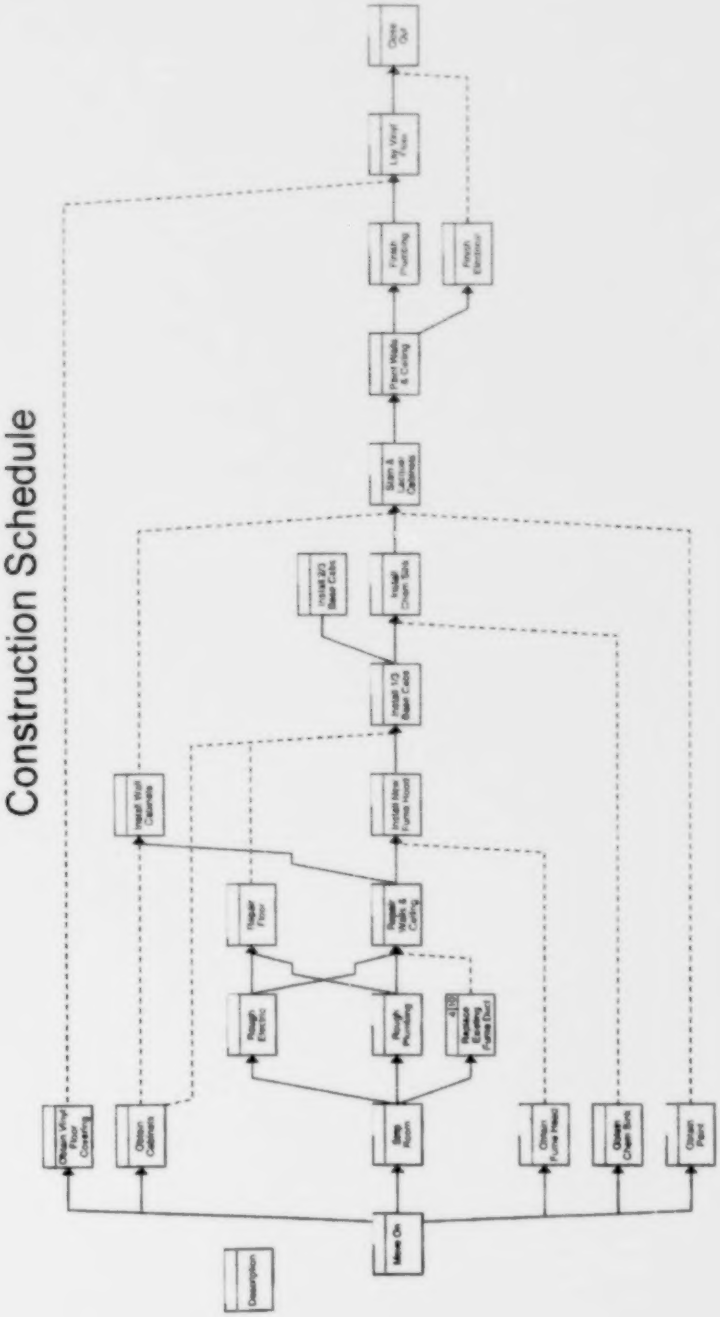
NOTE: The learner's answers will vary. An example of the type of responses is given here.


Receive marked test
Celebrate!
Spend more time reviewing
Call a cab to get home
Decide to go to bed
Sleep for 10 hours

SCHEDULING LISTS

Learner Worksheet

Create a series of simple lists describing the tasks for each trade. The label of each list is the trade involved in the project, and the elements are each task to be completed by this trade.


Construction Schedule
Description
Move On
Obtain Vinyl Floor Covering
Obtain Cabinets
Strip Room
Obtain Fume Hood
Obtain Chem Sinks
Obtain Paint
Rough Electric
Rough Plumbing
4
Replace Existing Fume Duct
Repair Floor
Repair Walls & Ceiling
Install Wall Cabinets
Install New Fume Hood
Install 1/3 Base Cabs
Install 2/3 Base Cabs
Install Chem Sinks
Stain & Lacquer Cabinets
Paint Walls & Ceiling
Finish Plumbing
Finish Electrical
Lay Vinyl Floor
Close Out

Document Use
Refresher
For Apprentices

ENTRY FORMS

Module 6

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

Nova Scotia Partners for Workplace Education

nscc

Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

INTRODUCTION

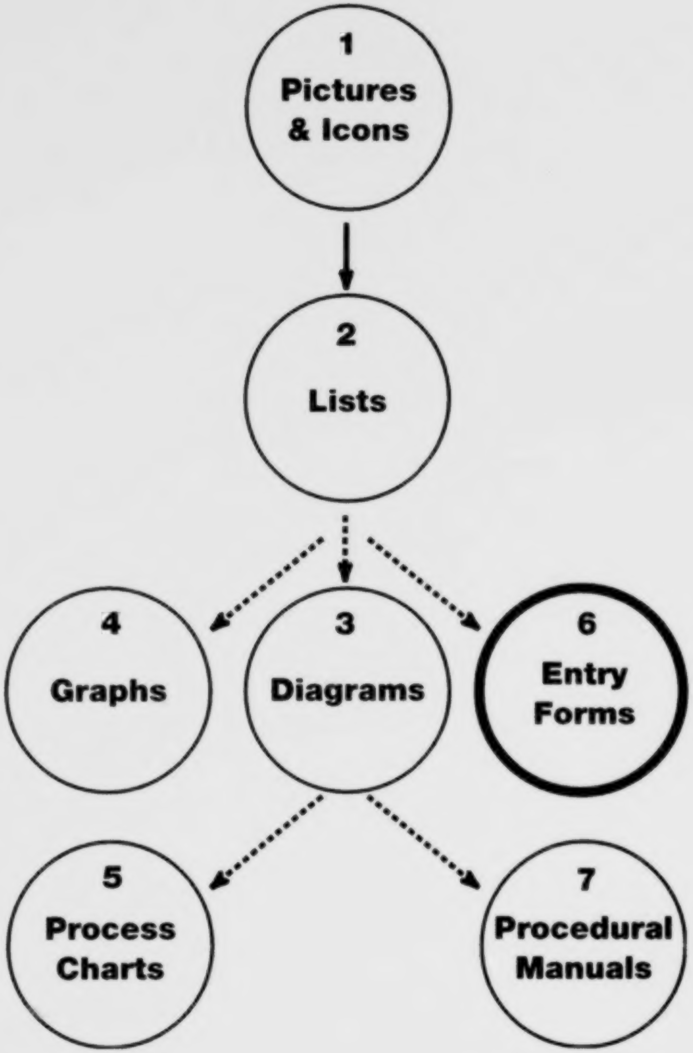
This module contains teaching and learning strategies applicable to all levels of document use, from simple to the complex. This module should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams*, *Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete *Module 3: Diagrams* before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learning activities, sample documents and activity worksheets. Please note, and reassure your learners, that the activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define entry forms as documents which both share information and require input of information.

Identify uses of entry forms found in workplaces.

Isolate the underlying lists in a variety of workplace entry forms.

Identify types and sources of information required by entry forms.

Complete a variety of workplace entry forms.

Apply knowledge of entry forms to workplace documents.

To the Instructor...

Learner Prerequisites:
- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent
- Module 1: Pictures and Icons, Document Use Refresher for Apprentices
- Module 2: Lists, Document Use Refresher for Apprentices

Instructor Materials:
- Module 6 teaching resources, including sample documents and activity worksheets
- Optional: flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

MODULE CONTENTS

ENTRY FORMS

Purpose 216

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PURPOSE

Entry Forms is the one module that requires the user to both read and enter information. This interactive relationship is more complex and, can be more challenging for some learners. This module provides strategies to assist learners with these challenges.

Strategies for Instruction

- Acknowledge that many jobs require more paperwork. Reinforce that no matter how time-consuming and wasteful the process seems to be, written documentation is an essential part of every trade.

- Discuss examples of written documentation. Present the *Room Finish Schedule (page 232)*, *Monthly Report (page 233)*, *Financial Statement (page 234)*, *Time Card (page 235)*, and *WCB Accident Report – Page 1 (page 236)*.

- Obtain feedback from learners on entry forms they have used or seen, such as job application forms, time cards, order forms, incident reports, supply lists, quality control checklists, and any others that arise in conversation. Invite learners to bring copies of their workplace entry forms to future classes, to share and discuss.

- Sort entry forms into general purpose categories. Forms for internal office use could include Room Finish Schedule, Monthly Report and Time Card. Forms for external regulations could include WCB, Accident Report. There are forms that may be both internal and external such as a Financial Statement. These general categories often determine what information is required and how the form is designed. Reinforce that knowing where the form came from, where it is going, and how the information will be used can aid in the process of filling in the information.

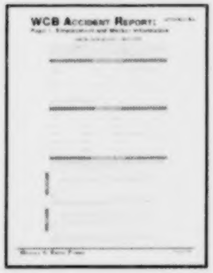
Supporting Documents

Room Schedule (page 232)

Monthly Report (page 233)

Financial Statement (page 234)

Time Card (page 235)



WCB - Page 1 (page 236)

- Review the features of entry forms:
    - Each has a distinct purpose.
    - They all require information to be entered onto them.
    - Information entered onto forms is either primary or secondary information.
    - Regardless of structure, all entry forms can be analyzed as lists or combinations of lists.
    - Completing entry forms is a requirement in most workplaces.

- Revisit *Tips for Filling out Forms (page 239)*, first seen in *Module 2:Lists*. Explain how these tips can be used to fill out any type of form efficiently.

Supporting Documents

Filling out Forms
(page 239)

Activities

Sharing Experience

Divide the class into small groups. Have each group record at least two common entry forms used in their workplaces. Have learners discuss and present to the class any challenges that were posed by these forms.

STRUCTURE

Learners not understanding how a document is structured can lead to difficulty in filling out entry forms. This topic introduces basic entry form structure to assist learners in working with various types of entry forms.

Strategies for Instruction

- Review the design of entry forms and the different purposes they may serve. Use the purpose of entry forms to lead into structure. What the forms need to do often determines how they are structured.

- Examine the design. Reinforce the concept from *Module 2: Lists* that all entry forms are lists. Revisit *From Entry Form to List (page 240)*, first seen in Module 2, and demonstrate with a sample. Point out how forms have headings for each information section; those headings are akin to the labels of a list. Show *Room Finish Schedule (page 232)* and *Monthly Report (page 233)*, pointing out the nested lists contained in each.

- Show the list sequence noting that nearly all forms are ordered from top to bottom. At the top is the key information required from the user. Use the *Time Card (page 235)* to demonstrate: at the top are blanks for the user's name and other identifying information.

- Reinforce the usefulness of labels. Each section should clearly state what information is required and from whom. Examine the *Application for Building and/or Development Permit (page 241)*. Point out the various sections. Discuss how Office Use Only sections are to be completed only by personnel processing the form.

- Point out that sections include command sentences, such as Use blue ink, Print here, or Sign below. In a well-written form, commands make the form easier to use. Present *Application to Write GED Tests*. Point out the command sentences, such as Please print the following information in block capitals, and Attach a copy of your photo ID here. Reinforce the previous concept by pointing out the Office Use Only section at the bottom.

Supporting Documents

From Entry Form to List

Entry Form to List (page 240)

Room Finish Schedule

Room Schedule (page 232)

Monthly Report

Monthly Report (page 233)

Time Card

Time Card (page 235)

Application for Building and/or Development Permit(s)

Building / Development (page 241)

- Use the *Room Finish Schedule (page 232)* to illustrate that some forms require a simple checkmark. Show *Quality Control Evaluation (page 242)* and *Apprenticeship Training Request (page 243)* to demonstrate how some forms require a combination of checks and statements of facts such as hours worked, supplies needed, or credentials earned. Other forms require the user to translate or adapt information to fit the spaces provided. Present the *WCB Accident Report – Page 2 (page 237)*, noting that a two-hour situation must be explained in several lines.
- Acknowledge that some entry forms are poorly-designed or may seem unnecessary. Focus on the need to complete these forms to meet workplace standards. Emphasize that upcoming topics will deal with problematic forms and skills to use them.

Supporting Documents

Room Schedule (page 232)

Quality Control (page 242)

Training Request (page 243)

WCB – Page 2 (page 237)

Activities

From Form to List

Examine a selected entry form from those provided. Working as a class, write the form as a simple list. Choosing a second sample, have learners work individually or in small groups and repeat the process. When done, point out the labels and sequence of items from top to bottom.

INFORMATION SOURCES

What do I know and What do I have to find? This topic introduces the types of information required by entry forms and offers strategies to find and record the necessary information.

Strategies for Instruction

- Explain that filling out a form is not a test or a race. Some forms, such as time cards, can be completed quickly. Many forms are not expected to be completed on the spot or in 30 seconds.

- Point out that a little preparation goes a long way in reducing errors, wasted time, and frustration. Revisit *Tips for Filling out Forms (page 239)*.

- Reinforce that entry forms are lists requiring the user to enter information. Knowing where the form came from, where it is going, and how the information will be used can ease the completion of the entry form.

- Consider the type of information required. There are two basic types:
  - Primary
  - Secondary

- Introducethe term primary information. Clarify that this is information typically held in memory. Name, address, and phone number are examples. Examine *Apprenticeship Training Request Form (page 243)*, *Monthly Report (page 233)*, *WCB Accident Report – Page 1 (page 236)*, and *Project Task Checklist (page 245)*. Show how the requests for primary information are at the top of the form.

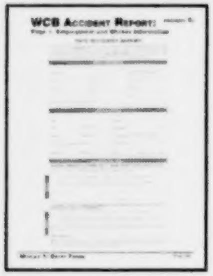
- Introduce the term secondary information. Clarify that this is information that needs to be found or researched. Your birth registry number, credit card number or a machine serial number are examples. Returning to the above samples and show how the secondary information is found further down the page.

Supporting Documents

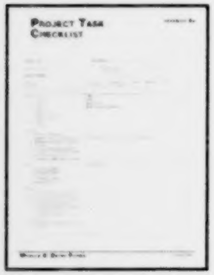
Filling out Forms (page 239)

Training Request (page 243)

Monthly Report (page 233)



WCB – Page 1 (page 236)



Project Task (page 245)

Activities

Primary Sort

Choose a sample from those provided. Have learners mark the primary information slots with a checkmark and the secondary information slots with an x.

Order the Blanks

Choose a sample from those provided. Have earners number the order in which they would fill in the blanks. Have learners list their numbers in two categories: primary and secondary.

TROUBLESHOOTING

This topic provides an opportunity to work on specific forms that learners provide and to address concerns raised in class. For specific practice, activities are included with each troubleshooting solution.

Note: Challenges with reading and understanding questions have many roots, including reading skills, choice of words, a reader's concentration, and the speed with which the form must be filled out. This refresher is written to learners with a minimum Grade 9 literacy level and does not address challenges with reading comprehension. Learners with significant difficulty in this area should be referred or encouraged to seek specific additional learning support.

Strategies for Instruction

- Review information learned to date:

  1. Determine where the form came from, where it is going, and how the information will be used.
  2. Determine if the information required is primary or secondary.
  3. Locate secondary information prior to completing the form.
  4. Read each label carefully before entering information.
  5. Take your time, most mistakes result from rushing to complete entry forms.

- Encourage feedback from learners on challenges experienced in completing entry forms. Discuss potential solutions.

- Identify workplace challenges in completing form, i.e., noise or other tasks that can conflict with the time and energy needed for paperwork. Encourage the learners to acknowledge the challenges and take steps to minimize them. Try to complete paperwork in a quieter place. If needed schedule time to complete paperwork.

- Practice working with entry forms, using samples included in this resource or samples provided by you or the learners.

Troubleshooting Solution 1:

- Read all directions included on the form. These directions explain if what is required is a yes or no answer, a checkmark, or a more detailed written response.

- Explain that every question contains a gift: a key word or phrase that gives a clue as to what information is required. Have learners choose a form that they find problematic, and demonstrate the concept.

- Unfamiliar phrases? Explain that one solution is to make a list and ask a co-worker or supervisor for explanation. If the forms in question are routine, study the phrases and their meaning. This studying plus practice can help commit these challenging phrases to memory. Emphasize that being puzzled by some terms is common and not a sign of incompetence. In fact, asking for an explanation and properly filling out the form are signs of competence.

Activities

Discuss the Instructions

Choose a form from those provided. Have learners highlight or otherwise identify all instructions. Discuss any instructions that were missed or were found to be confusing.

Troubleshooting Solution 2:

- Fill out all necessary blanks.
- Suggest that learners simplify the form by viewing the form's structure as a list. This can help reduce the form from a mass of words and lines to an ordered sequence of lists and blanks requiring information.
- Review the need to read all directions. Mandatory fill-ins and office use only blocks are usually clearly marked.
- If a question is not understood, review the concept that every question contains a gift: a key word or phrase that gives a clue as to what information is required.
- Reinforce the need to inspect the form after it is filled out and before it is submitted. Point out that forms should be checked to ensure all blanks are completed according to the instructions provided.

Activities

Permit Paperwork

Learner Worksheet (page 247);
Using the *Application for Building and/or Development Permit(s) (page 241)* complete the following assignment:

1. List the main categories of information.
2. Identify with a P the areas needing primary information.
3. Identify with an S the areas needing secondary information.
4. Identify with an X the blanks to leave empty.
5. Label with a question mark any confusing terms or sections. Discuss these with your instructor.

Activity Worksheets

PERMIT PAPERWORK

Permit Paperwork (p247)

Troubleshooting Solution 3:

- Summarize important information.

- This skill is often required for incident reports. The question will be Describe what happened, Summarize the events, or something similar. The challenge is to condense the information into several lines.

- Empathize that this is a challenge for most people but there are workable solutions that can help.

- Use a workplace incident as an example.

- Review the definition of a list, which is a label with related items. Demonstrate how the incident description can be turned into a list. The label is the title: key words. The list is the steps leading up to and including the accident.

- Introduce selection. Review the list. Can any steps be taken out without leaving a gap in the story? Are more steps needed to adequately explain the incident? Keep the list as short but as accurate as possible. To aid in understanding, reinforce cause and effect.

- When documenting consider the cause of an incident, the effect of an incident or both.

Activities

Incident on Paper

Learner Worksheet (page 248)
Have learners practice these steps individually or in groups. This also works well as a class exercise. The worksheet includes the following information:

Scenario: You are a supervisor at an electrical utility. You must record, in writing, a complaint made by a customer about one of your technicians. You have spoken to the customer, spoken to your technician, and resolved the situation. Here is what you were told and how you solved the problem.

- On June 12, 12:15 p.m., our customer service centre received a call about a power outage at a residential dwelling in the west end of Morebrook. The call was forwarded to our department. A check of our grid monitors showed normal readings and output. I determined the problem was localized. At 12:30 p.m., I dispatched technician, Terry Raoul, to the location given: 1345 Springbrook Crescent. Terry is one of our best technicians – he is friendly, he knows his stuff, and he's a lot of fun to be with. We play hockey every Saturday. When he arrived, Terry spoke with homeowner Martin Sims. Mr. Sims indicated that his electricity was on when he left at 9:30 a.m. When he returned at about noon, his entire house was without power. Terry checked the electrical panel and service of the residence and found them to be in working order. He conducted an inspection of the overhead feeder lines and found them to be in good condition, however, he discovered a non-functioning drop [overhead wire]. Following procedure, Terry wrote up a work order and gave it to the customer, explaining that the problem would be fixed at central switching and that electricity to the home would be restored within the hour. The customer seemed fine with the explanation, according to Terry; however, soon after Terry phoned dispatch to say he was on to the next job, our customer service centre received a call from Martin Sims. He was very angry. The operator said he was fuming. In fact, she apologized for transferring the call. But that's Margie, she's a doll. I talked to Mr. Sims, but it took me a minute to understand him. I had to ask him to calm down a few times. What I heard was something about the technician being very rude, and there was no way he was putting up with that from anyone. I'm thinking that I have never seen a rude bone in Terry's body. So, I asked Mr. Sims what happened. He said the work order was a joke, that Terry didn't take him seriously and had told him off, in writing. I think back to Terry's call – he told me he needed a work order put in to central switching. It sounded like he took it seriously to

Activity Worksheets

Incident on Paper (p248)

me. I asked Mr. Sims what the work order said. He read it to me. I snickered. Mr.Sims didn't like it. I apologized and explained that Terry wasn't being rude. He was just using the technical term for the problem. Once I explained the term, Mr.Sims got very quiet. He apologized. He even laughed, and while I was on the phone, his power came back on. So, he hung up happy. I told Terry, though, when he got back that he owed me big for saving his butt from a reprimand. He looked surprised when I told him his work order nearly put him on report. He wanted to know what Mr. Sims didn't like. I told him it was his description of the problem: Power Out. Drop Dead.

Using information from this incident, follow the steps below to create a summary for an incident report. Discuss the results.

Summarizing an Incident:

1. Write a sentence or phrase to describe the incident.
2. Make a list of steps describing the incident.
3. Review the steps. Remove any that are not important to the description. Add any details that are needed.
4. Write a concluding statement – a sentence that sums up your description.

Variation: Have learners follow the *Writing a Process Paragraph* chart *(page 199)* if *Module 5: Process Charts* has been covered at this point.

Supporting Documents

Process Paragraph (page 199)

ADDITIONAL LEARNING ACTIVITIES

Reporting a Workplace Accident

Learner Worksheets (pages 249 and 250)

This activity shows a diagram of a workplace accident and asks learners to fill out an accident report form based on the information provided by the diagram.

Training Request

Learner Worksheet (page 251)

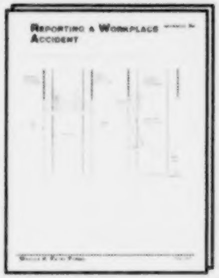
This activity asks learners to examine the Apprenticeship *Training Request Form (Page 251)*. Have learners make a list of Primary Information, Secondary Information, and blanks to leave empty.

Filling in a Time Card

Learner Worksheet (page 252)

This activity shows a time card and information on hours worked. Have learners complete the time card.

Activity Worksheets



Workplace Accident (p249)

Training Request (p251)

Filling in a Time Card (p252)

Document Use
Refresher
For Apprentices

SUPPORTING DOCUMENTS

Module 6

Appendix 6A

ROOM FINISH SCHEDULE

APPENDIX 6A

ROOM FINISH SCHEDULE

ROOMS	FLOOR				CEILING				WALL				BASE				TRIM			REMARKS
	CARPET	CERAMIC TILE	RUBBER TILE	CONCRETE	ACOUSTIC TILE	DRYWALL	PAINT	CERAMIC TILE	DRYWALL	PAINT	WALLPAPER	CERAMIC TILE	WOOD	RUBBER	CERAMIC TILE	STAIN	WOOD	STAIN	PAINT	
ENTRY		✓			✓				✓	✓	✓		✓			✓	✓	✓		See owner for all painting
HALL	✓				✓				✓	✓			✓			✓	✓	✓		
BEDROOM 1	✓				✓				✓	✓	✓		✓			✓	✓	✓		See owner for grade of carpet
BEDROOM 2	✓				✓				✓	✓			✓			✓	✓	✓		See owner for grade of carpet
BEDROOM 3	✓				✓				✓	✓			✓			✓	✓	✓		See owner for grade of carpet
BATH 1	✓	✓			✓			✓	✓	✓	✓	✓	✓			✓	✓	✓		Wallpaper 3 walls around vanity
BATH 2		✓			✓			✓	✓	✓	✓	✓			✓		✓	✓		Water-seal tile Wallpaper w/wall
UTIL + CLOSETS	✓		✓			✓	✓		✓	✓			✓			✓	✓	✓	✓	Use off-white flat latex
KITCHEN			✓		✓				✓	✓				✓			✓	✓		
DINING	✓				✓				✓	✓	✓		✓			✓	✓	✓		
LIVING	✓				✓				✓	✓			✓			✓	✓	✓		See owner for grade of carpet
GARAGE				✓		✓	✓					✓		✓			✓	✓		

MONTHLY REPORT

Vacation, Sick Leave, Special Leave Report

______________________ (Name, Please print)

______________________ 2003
(Month) (Year)

Instructions: ***Complete this form on the last working day of each month and forward to your supervisor for approval.***

Please check appropriate box:

☐ I was at work each full working day.

☐ I was absent __________ day(s) (vacation, etc.) as shown below.
(# of days)

DATE (S)	TYPE OF LEAVE		
	VACATION	SICK LEAVE	SPECIAL LEAVE - (PLEASE STATE REASON)

______________________ Signature of Employee ______________________ Date

______________________ Signature of Supervisor ______________________ Date

APPENDIX 6A

FINANCIAL STATEMENT

Financial Statement for the month of ______________________

INCOME			**Budget**	**Actual**
Employment Income (take-home pay)				
Investment Income				
Commissions and Tips				
Other income				
		Total Monthly income	____________	____________
EXPENSES				
Compulsory Savings				
Emergency Account				
Investments				
		Total	____________	____________
Home Costs	Mortgage			
	Electricity			
	Heating			
	Maintenance and Repairs			
	Telephone			
	Cable TV			
	Home Insurance			
	Taxes			
	Other			
		Total	____________	____________
Food	Groceries			
	Restaurants			
	Other			
		Total	____________	____________
Personal Expenses	Life Insurance			
	Restaurants			
	Medical and Dental			
	Hair styling			
	Clothing			
	Pocket Money			
	Other			
		Total	____________	____________
Leisure Time	Holiday			
	Sports			
	Movies, dances, etc.			
	Magazines, newspapers			
	Other			
		Total	____________	____________
Other	School costs			
	Child care			
	Miscellaneous			
		Total	____________	____________
	Total Monthly Expenses (includes savings)		____________	____________
	Total Monthly Income		____________	____________
	Discretionary Income (total income less total expenses)		____________	____________

TIME CARD

Employee Name: ____________________

Week Ending: ____________________

Employee Number: ____________________

Job Number	Cost Code	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Total	
		Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T

Employee Signature: ____________________

Supervisor Signature: ____________________

WCB ACCIDENT REPORT: APPENDIX 6A

Page 1, Employer and Worker Information

WCB ACCIDENT REPORT

This form must be completed by both the employer and the injured worker and forwarded to the Workers' Compensation Board (WCB) within **FIVE BUSINESS DAYS** of the accident or illness being reported to the employer. Failure to do so could result in penalties being imposed. If, due to the seriousness of the injury, the worker is not able to sign this form, please forward the Accident Report unsigned by the worker. **PLEASE PRINT CLEARLY**. This report is also available as a PDF (Portable Document Format) file which can be downloaded from the WCB website at www.wcb.ns.ca.

EMPLOYER INFORMATION

COMPANY NAME		BUSINESS # (OR FIRM NUMBER)
STREET	CITY/TOWN	CONTACT NAME
PROVINCE	POSTAL CODE	CONTACT PHONE
PHONE	FAX	EMAIL
TRADE NAME (IF DIFFERENT THAN COMPANY NAME)		

WORKER INFORMATION

NAME		OCCUPATION
STREET	CITY/TOWN	NS HEALTH CARD #
PROVINCE	POSTAL CODE	SOCIAL INSURANCE # (PLEASE COMPLETE ON ALL PAGES)
MAILING ADDRESS (IF DIFFERENT THAN ABOVE)		DATE OF BIRTH (D/M/Y)

HOME PHONE WORK PHONE CELL PHONE GENDER: ☐ MALE ☐ FEMALE

DECLARATION AND CONSENT

THE WORKERS' COMPENSATION ACT REQUIRES THAT BOTH THE EMPLOYER AND THE WORKER SIGN THIS REPORT. If the worker is not immediately available, the employer should sign and forward to the WCB without the worker's signature. It is unlawful to knowingly submit false or misleading information to the WCB.

EMPLOYER:

_____ I declare that all the information provided by me is true and correct to the best of my knowledge.

OR

_____ I declare that I have reviewed the information provided by the worker, and I disagree on certain parts. I have attached a separate sheet with my comments and provided a copy to the worker.

EMPLOYER'S SIGNATURE TITLE

PHONE DATE (D/M/Y)

IT IS UNLAWFUL TO COLLECT FULL EARNINGS REPLACEMENT BENEFITS WHILE WORKING OR CAPABLE OF WORKING. YOU MUST ADVISE WCB OF ANY CHANGE IN YOUR EMPLOYMENT STATUS.

WORKER:

_____ I declare that all the information provided by me is true and correct to the best of my knowledge.

OR

_____ I declare that I have reviewed the information provided by the employer, and I disagree on certain parts. I have attached a separate sheet with my comments and provided a copy to the employer.

This will serve the Workers' Compensation Board as my consent to obtain and distribute any information from MSI / Maritime Medical Care Inc., that the WCB determines is necessary to process this claim.

WORKER'S SIGNATURE DATE (D/M/Y)

Notice: The WCB may obtain and share any information necessary to process this claim with appropriate health care professionals and government agencies. Such information may include, but is not necessarily limited to, current and prior medical records, examinations, treatments and income information.

WCB ACCIDENT REPORT: APPENDIX 6A

Page 2, Accident information

MUST BE COMPLETED ON EACH PAGE

SOCIAL INSURANCE NUMBER

WCB ACCIDENT REPORT

ACCIDENT INFORMATION

To be completed by both the employer and the worker. If more space is needed, please attach additional pages, or use the space provided on page 3.

1. Please **check one**. The injury or illness occurred:

☐ From a specific accident

DATE (D/M/Y) ______ , TIME ______ : ______ ☐ AM ☐ PM

Please complete questions 2-7.

☐ Over a period of time. Date symptoms first noticed: ______ DATE (D/M/Y)

Please complete questions 2-12.

2. What body part was injured? ______

☐ Left side ☐ Right side ☐ Upper body ☐ Lower body

3. **How** did the injury(ies) / illness(es) happen? List any and all weights, distances, movements and equipment involved and the conditions or activity occurring at the time of the incident. If relevant, list exposures to noise or chemical agents, and the duration of the exposure.

______
CITY/TOWN/PROVINCE WHERE INCIDENT OCCURRED

Did any person or factor other than the employer or coworkers contribute to the cause of the injury or illness? ☐ YES ☐ NO

If person, please provide name: ______

If factor, please explain: ______

4. If medical attention was sought, please provide the name of the doctor **OR** medical facility where the worker was first seen. Also provide the date, phone number and location of the doctor **OR** medical facility.

______
NAME OF DOCTOR OR MEDICAL FACILITY

______
DATE (D/M/Y) PHONE LOCATION

5. Did the worker lose **time** because of this injury or illness? ☐ YES ☐ NO

If yes, give the date and time when time-loss started:

DATE (D/M/Y) ______ , TIME ______ : ______ ☐ AM ☐ PM

Did the worker lose **earnings** because of this injury or illness? ☐ YES ☐ NO

If yes, give the date and time when earnings-loss started:

DATE (D/M/Y) ______ , TIME ______ : ______ ☐ AM ☐ PM

Please complete page 3 if you answered yes to either of these questions.

6. Indicate if the worker is:

☐ a proprietor ☐ a partner ☐ an active officer or director of the company

Indicate if the worker is a family member living in the household of any proprietor / partner / active officer or director of the company.

☐ YES ☐ NO

7. To whom at your place of employment was the injury or illness reported?

______
NAME

______
TITLE PHONE

Date reported: ______ Please explain any delay in reporting:

IF THE INJURY OR ILLNESS OCCURRED **OVER A PERIOD OF TIME**, PLEASE COMPLETE QUESTIONS 8-12. USE EXTRA PAGES IF NECESSARY.

8. What are the worker's main job tasks?

9. Is the worker left or right hand dominant? ☐ Left ☐ Right

10. How long has the worker been employed in this specific job / position?

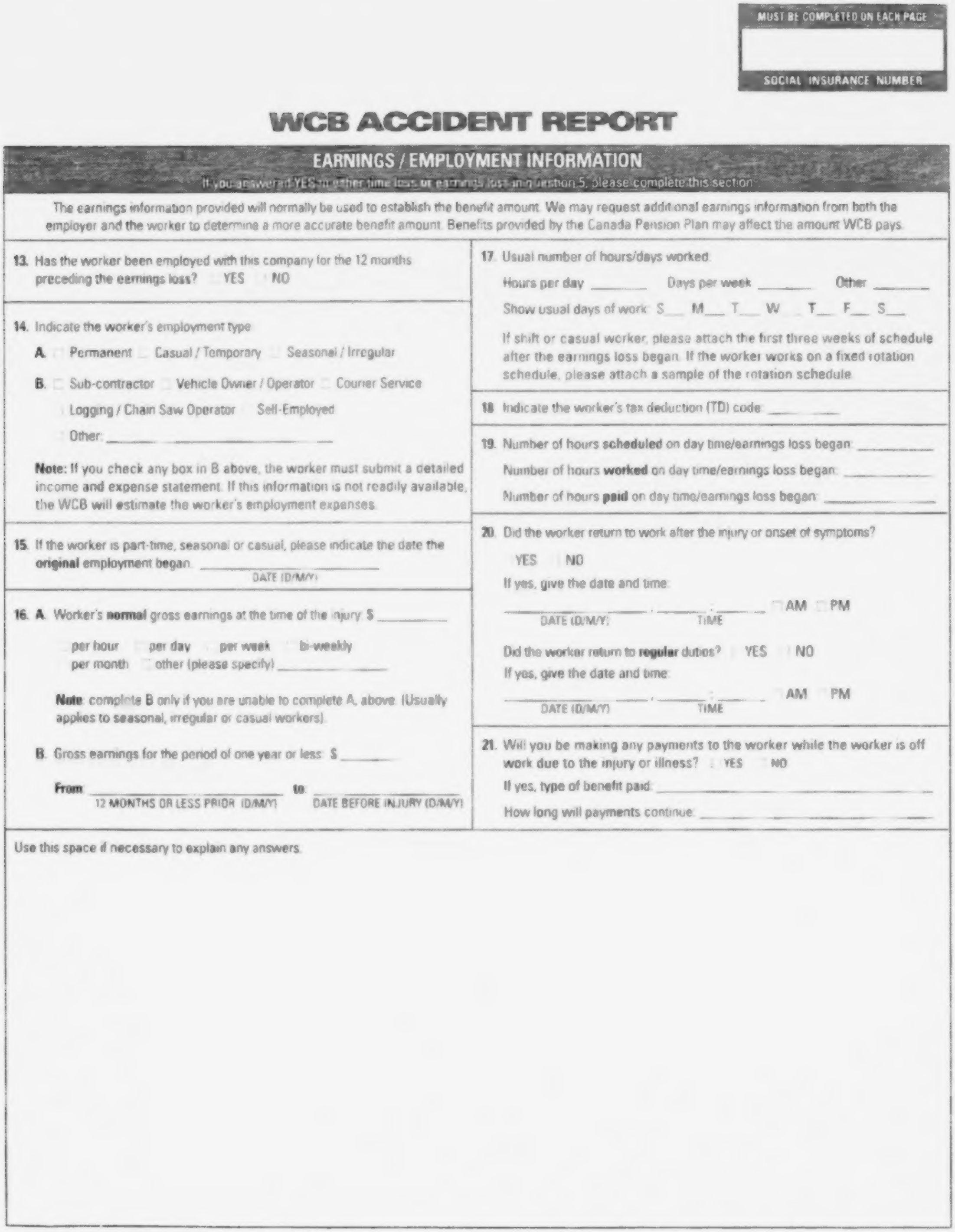
If less than 90 days, in what job / position were they previously employed?

11. How much overtime did the worker perform in the 90-180 days before this injury or illness occurred?

12. Have there been any changes in the worker's responsibilities in the past 90-180 days? (eg. changes in duties, changes in workload, a leave of absence). Please explain.

WCB ACCIDENT REPORT:

PAGE 3, EARNING/EMPLOYMENT INFORMATION



MUST BE COMPLETED ON EACH PAGE

SOCIAL INSURANCE NUMBER

WCB ACCIDENT REPORT

EARNINGS / EMPLOYMENT INFORMATION

If you answered YES to either time loss or earnings loss in question 5, please complete this section

The earnings information provided will normally be used to establish the benefit amount. We may request additional earnings information from both the employer and the worker to determine a more accurate benefit amount. Benefits provided by the Canada Pension Plan may affect the amount WCB pays.

13. Has the worker been employed with this company for the 12 months preceding the earnings loss? ☐ YES ☐ NO

14. Indicate the worker's employment type

A. ☐ Permanent ☐ Casual / Temporary ☐ Seasonal / Irregular

B. ☐ Sub-contractor ☐ Vehicle Owner / Operator ☐ Courier Service

☐ Logging / Chain Saw Operator ☐ Self-Employed

☐ Other: ______________________

Note: If you check any box in B above, the worker must submit a detailed income and expense statement. If this information is not readily available, the WCB will estimate the worker's employment expenses.

15. If the worker is part-time, seasonal or casual, please indicate the date the **original** employment began. ______________
DATE (D/M/Y)

16. A. Worker's **normal** gross earnings at the time of the injury: $ ________

☐ per hour ☐ per day ☐ per week ☐ bi-weekly
☐ per month ☐ other (please specify) ____________

Note: complete B only if you are unable to complete A, above. (Usually applies to seasonal, irregular or casual workers).

B. Gross earnings for the period of one year or less: $ ________

From ______________ **to** ______________
12 MONTHS OR LESS PRIOR (D/M/Y) DATE BEFORE INJURY (D/M/Y)

17. Usual number of hours/days worked

Hours per day ______ Days per week ______ Other ______

Show usual days of work: S__ M__ T__ W__ T__ F__ S__

If shift or casual worker, please attach the first three weeks of schedule after the earnings loss began. If the worker works on a fixed rotation schedule, please attach a sample of the rotation schedule.

18. Indicate the worker's tax deduction (TD) code: ________

19. Number of hours **scheduled** on day time/earnings loss began: ________

Number of hours **worked** on day time/earnings loss began: ________

Number of hours **paid** on day time/earnings loss began: ________

20. Did the worker return to work after the injury or onset of symptoms?

☐ YES ☐ NO

If yes, give the date and time:

________ ________ ☐ AM ☐ PM
DATE (D/M/Y) TIME

Did the worker return to **regular** duties? ☐ YES ☐ NO

If yes, give the date and time:

________ ________ ☐ AM ☐ PM
DATE (D/M/Y) TIME

21. Will you be making any payments to the worker while the worker is off work due to the injury or illness? ☐ YES ☐ NO

If yes, type of benefit paid: ______________

How long will payments continue: ______________

Use this space if necessary to explain any answers.

TIPS FOR FILLING OUT FORMS

Tips for Filling Out Forms

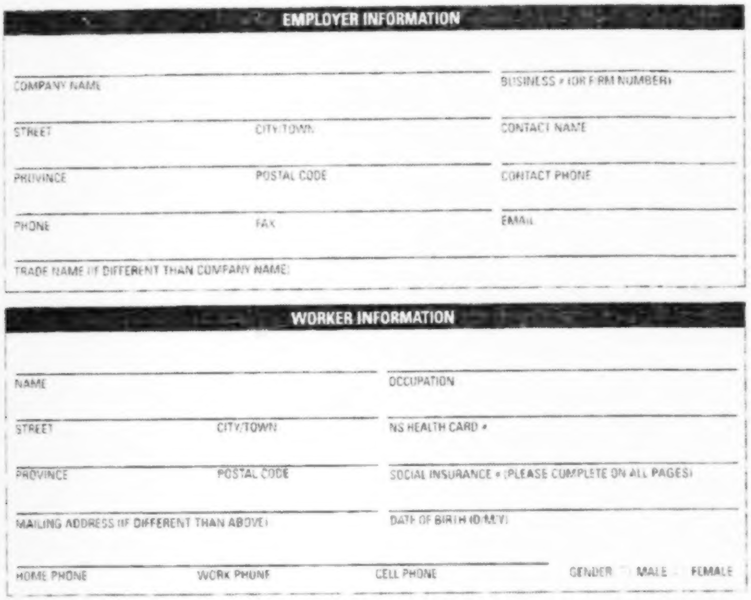
- Take your time
- Ask for help
- Follow directions exactly
- Think before you write
- Print neatly
- Fill in all necessary blanks
- Be truthful
- Review your finished form
- Sign the form

FROM ENTRY FORM TO LIST

From Entry Form to List

An entry form is a series of lists requiring and providing information.

The entry form:



EMPLOYER INFORMATION

COMPANY NAME		BUSINESS # (OR FIRM NUMBER)
STREET	CITY/TOWN	CONTACT NAME
PROVINCE	POSTAL CODE	CONTACT PHONE
PHONE	FAX	EMAIL
TRADE NAME (IF DIFFERENT THAN COMPANY NAME)		

WORKER INFORMATION

NAME		OCCUPATION	
STREET	CITY/TOWN	NS HEALTH CARD #	
PROVINCE	POSTAL CODE	SOCIAL INSURANCE # (PLEASE COMPLETE ON ALL PAGES)	
MAILING ADDRESS (IF DIFFERENT THAN ABOVE)		DATE OF BIRTH (D/M/Y)	
HOME PHONE	WORK PHONE	CELL PHONE	GENDER ☐ MALE ☐ FEMALE

The lists:

Entry form

- Employer Information
- Worker Information
- Declaration and Consent

From the main list comes related lists, such as:

Employer Information

- Company name
- Street
- City/Town
- Province
- Postal Code
- Phone
- Fax
- Trade name
- Business #
- Contact name
- Contact phone
- Email

Worker Information

- Name
- Street
- City/Town
- Province
- Postal Code
- Mailing Address
- Home Phone
- Work Phone
- Cell Phone
- Occupation
- NS Health Card #
- Social Insurance #
- Date of Birth
- Gender

APPLICATION FOR BUILDING AND/OR DEVELOPMENT PERMIT(S)

APPENDIX 6A

PLEASE NOTE THIS IS AN APPLICATION ONLY. WORK SHALL NOT COMMENCE UNTIL THE REQUIRED PERMIT(S) HAVE BEEN ISSUED.

APPLICANT IS REQUESTED TO FILL IN ALL THE SPACES WHICH APPLY. IMPROPERLY COMPLETED FORMS WILL BE RETURNED.

SUBMIT WITH REQUIRED FEE TO:

APPLICATION NUMBER	ESTIMATED VALUE OF CONSTRUCTION	APPLICATION FEE	MUNICIPALITY OF	APPLICATION DATE	APPLICANT OR OWNER'S PHONE NO.

OWNER'S NAME	MAILING ADDRESS	CONTRACTOR'S PHONE NO.

CONTRACTOR	ARCHITECT OR ENGINEER	PLUMBING CONTRACTOR	

APPLICATION FOR:	CHANGE OF USE	POOL	CONVENTIONAL BUILDING	PRE-MFGED BUILDING	MOBILE HOME	RELOCATION	ADDITION	RENOVATION & REPAIRS	SIGN	DEMOLITION	OTHER	GARAGE PRIV ☐ COMM ☐

Type of Occupancy	SINGLE FAMILY	TWO FAMILY	MULTI-FAMILY	COMMERCIAL	INDUSTRIAL	INSTITUTIONAL	AGRICULTURAL	OTHER	DESCRIBE

LOCATION OF PROPOSED DEVELOPMENT	NAME OF STREET OR HIGHWAY	lot no.		CORNER LOT YES ☐ NO ☐

SITE LINE DETAILS

Central Services (Water & Sewer)	YES ☐	NO ☐	On-Site Services (Water & Septic)	YES ☐	NO ☐			
SITE PLAN ENCLOSED	YES ☐ NO ☐	DIMENSIONS OF LOT	FRONT	REAR	L. SIDE	R. SIDE		
YARD CLEARANCE	FRONT	REAR	L. SIDE	R. SIDE				

IN THE SPACE BELOW, INDICATE WHERE YOUR PROPERTY STRUCTURE WOULD BE IN RELATIONSHIP TO YOUR PROPERTY LINES. ALSO INDICATE THE DIMENSIONS OF YOUR PROPERTY AND BUILDING.

CONSTRUCTION DETAILS

DIMENSIONS OF BUILDING	FRONT	SIDE	HEIGHT						
BUILDING PLANS SUBMITTED	YES ☐ NO ☐	FOUNDATION WALLS	CONCRETE	CONC.BLOCK	WOOD	OTHER	THICKNESS		
FLOOR JOIST SIZES	FIRST FLOOR	SPACING	WIDTH	THICKNESS	SECOND FLOOR	SPACING	WIDTH	THICKNESS	
ROOF CONST.	WOOD TRUSS	WOOD RAFTER	STEEL	BUILT-UP	OTHER				
WALL STUD CONSTRUCTION	FIRST FLOOR	SPACING	WIDTH	THICKNESS	SECOND FLOOR	SPACING	WIDTH	THICKNESS	
EXTERIOR WALLS	BRICK	STONE	WOOD	STEEL	OTHER	ROOFING	ASPHALT	STEEL	BUILT-UP	OTHER
CHIMNEY CONSTRUCTION	BRICK WITH LINING	PATENT	NO. OF FLOORS	BASEMENT	1ST FLOOR	2ND FLOOR	3RD FLOOR	4TH FLOOR	
NO. OF ROOMS	LIVING	DINING	KITCHEN	BEDROOMS	FAMILY ROOM	RECREATION	BATHROOMS	BASEMENT	OTHER
OTHER APARTMENTS IN BUILDING	YES ☐ NO ☐								

I HEREBY MAKE APPLICATION FOR BUILDING AND OR DEVELOPMENT PERMITS AS DESCRIBED HEREIN. I CERTIFY THAT I AM THE OWNER OR ACTING WITH THE OWNERS WRITTEN CONSENT.

SIGNATURE OF APPLICANT

X

SITE PLAN

REAR

LEFT

RIGHT

FRONT PROPERTY LINE

PLEASE FILL IN APPLICABLE DIMENSIONS

ADDITIONAL INFORMATION

OFFICE USE ONLY

DEPARTMENT	APPROVALS & DATE	DEPARTMENT	APPROVALS & DATE
DEVELOPMENT OFFICER		BUILDING INSPECTOR	
PID		ZONE	

QUALITY CONTROL EVALUATION

SUPPLIER (NAME & ADDRESS)

DATE OF EVALUATION

☐ APPROVED

☐ PROVISIONALLY APPROVED

☐ NOT APPROVED

☐ PRE-AWARD

☐ RESURVEY

SURVEYED TO	SUPPLIER COMPLIES	
	YES	NO

QUALITY CONTROL ORGANIZATION

QUALITY CONTROL MANAGER (NAME)

REPORTS TO (NAME AND TITLE)

CHIEF INSPECTOR (NAME)

INSPECTION PERSONNEL

No.	RATIO TO PRODUCTION PERSONNEL

SURVEY PERSONNEL

NAME	TITLE

APPRENTICESHIP TRAINING REQUEST

APPENDIX 6A

To request training, please complete this form and return or fax to the address above. Your Industrial Training and Certification Officer will contact you to confirm seat availability and your eligibility for the requested training. It is important to register for technical training as soon as possible as seats are assigned on a first-come basis within each county.

PLEASE PRINT

Full Name ______________________________
First Name Middle Name Last Name

Address ______________________________

City/Town ______________ County ______________ Province ______________

Postal Code ______________ Home Phone ______________ Business Phone ______________

Trade ______________ Employer Signature ______________

Industrial Training and Certification Officer ______________

I wish to register for the following training:

First Choice	**Second Choice**
______________	______________
______________	______________
Date(s) ______________	Date(s) ______________
Location ______________	Location ______________

OFFICE USE ONLY

Date(s) Client/Employer Contacted ______________

Client approved for training Y N

Course Offer #s ______________

Schedule for above training Y N

Wait List for above training Y N

Forward for data entry

Client scheduled/waitlisted

APPLICATION TO WRITE GED TESTS

APPENDIX 6A

Step 1 ➜ Tell us who you are

PLEASE PRINT the following information in block capitals

Last Name (as it appears on your ID)
First Name (no nicknames or abbreviations)
Middle Initial
Social Insurance Number
Mailing Address (Include Apartment Number, PO Box, RR, Comp or Site)
Home Telephone (Include Area Code) ( ) -
City/Town
Province
Postal Code
Work Telephone (Include Area Code) ( ) -
Date of Birth M D Y
Age (Must be 19 Years on Test Date)
Last Grade Completed
Year
Name of School Last Attended
Preferred Writing Location and Date (Refer to GED Testing Schedule)
(1st choice)
(2nd choice)

Step 2 ➜ Tell us what tests you are applying to write

The 2002 English Test Series is the most current version

☐ I am applying to write the English version of the 2002 GED tests for the first time

or,

☐ I have already written the English version of the 2002 GED tests and need to re-write the following tests

(If you know the tests you need to re-write, please check (✔) below)

- ☐ **Language Arts, Reading**
- ☐ **Language Arts, Writing (including essay)**
- ☐ **Mathematics (Part I and II)**
- ☐ **Social Studies**
- ☐ **Science**

The 2004 French Test Series is the most current version

☐ I am applying to write the French version of the 2004 GED tests for the first time

or,

☐ I have already written the French version of the 2004 GED tests and need to re-write the following tests

(If you know the tests you need to re-write, please check (✔) below)

- ☐ **Langue française, Lecture**
- ☐ **Langue française, Écriture**
- ☐ **Mathématiques (parties I et II)**
- ☐ **Sciences humaines**
- ☐ **Sciences**

The GED office will verify which test(s) you need to write when your application has been received.

Step 3 ➜ Are you eligible to write?

☐ I will be at least 19 years of age on the date of the tests.

☐ I have not received a Grade 12 graduation certificate from any institution.

☐ I have been out of the public school system for one year.

I certify that, to the best of my knowledge, the information I have supplied above is correct and that I meet ALL of the above requirements.

APPLICANT'S SIGNATURE ____________________

DATE ____________________

Step 4 ➜ Attach a copy of your photo ID here

(Please attach a copy of your government issued photo ID here)

Step 5 ➜ Did you remember to include

Your application will not be processed and will be returned to you if you have not included the following information:

- ☐ Completed application with your signature
- ☐ Copy of your government issued photo ID
- ☐ Non-refundable application fee of $37.30 Money Order payable to the Minister of Finance

For Office Use Only

Date Rec'd ____________ ID Attached ________ Fee Rec'd ____________
Receipt # ____________ Testing Date Assigned ____________
Location Assigned ____________ Notice Sent (Date) ____________
Transaction # ____________ Amt $________ Date Rec'd ____________

PROJECT TASK CHECKLIST

APPENDIX 6A

Project No: ____________ ***Description:*** ________________________________

Project Leader: ________________ *Reviewed By:* ____________________________

Review Date: ________________

Type of Review

Drawing Dwg #: ____________ /Rev #_____	*Manuals* *Stability Book* *Specs* *Reports* *Calcs* (circle one) *Other:* ________________
General ☐ Title Block ☐ Scale ☐ Parts List ☐ Notes ☐ Reference Drawings ☐ Drawing Number ☐ Sheets ☐ Revision	**Title:** **Date:** **Revision #:** **Reference Documents:**
Integration ☐ Principal Dimensions ☐ Alignment with Existing Structure ☐ Alignment with New & Adjacent ☐ Structure ☐ Size of Components/Systems ☐ Location of Components /System with Interdependence ☐ Compliance with Approved Dwgs	Check against at least 2 other approved like documents 1 2
Details ☐ All parts identified ☐ Correct # of Parts ☐ Part Dimensions ☐ Fit of Parts to Parts ☐ Material Grade Erection ☐ Machining/tolerance Symbols ☐ Welding Symbols for Fabrication ☐ Welding Symbols for Installation ☐ Green Material Allowances ☐ Trimming Notes at Ship: Assembly ☐ Fabrication Sequence ☐ Installation Sequence Documentation ☐ All Applicable Reference Dwgs/doc on hand	COMMENTS:

Document Use
Refresher
For Apprentices

ACTIVITY WORKSHEETS

Module 6

Appendix 6B

PERMIT PAPERWORK

Learner Worksheet

Using the *Application for Building and/or Development Permit(s) (page 241)* complete the following assignment.

1. List the main categories of information.
2. Identify with a P the areas needing primary information.
3. Identify with an S the areas needing secondary information.
4. Identify with an X the blanks to leave empty.
5. Label with a question mark any confusing terms or sections. Discuss these with your instructor.

INCIDENT ON PAPER

Learner Worksheet

Using information from this incident, follow these steps to summarize for an incident report form.

Summarizing an Incident:

1. Write a sentence or phrase to describe the incident.
2. Make a list of steps describing the incident.
3. Review the steps. Remove any that are not important to the description. Add any details that are needed.
4. Write a concluding statement – a sentence that sums up your description.

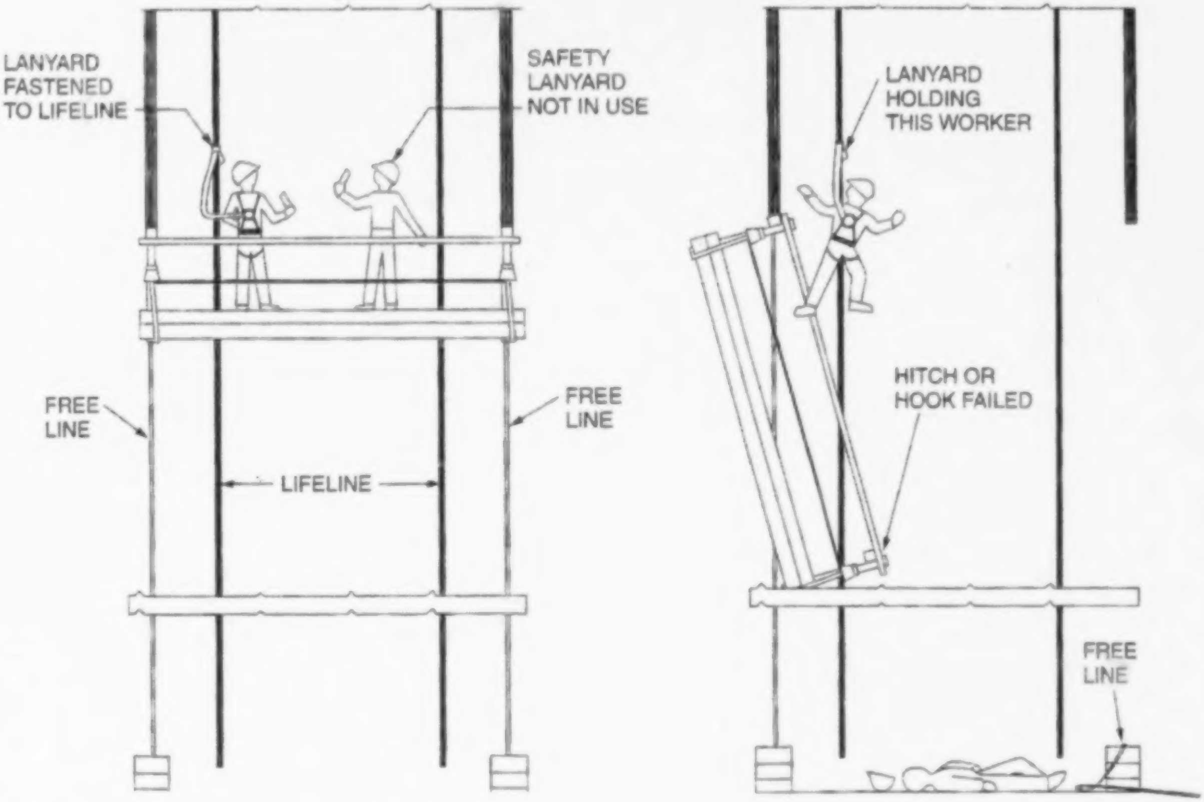
Scenario: You are a supervisor at an electrical utility. You must record, in writing, a complaint made by a customer about one of your technicians. You have spoken to the customer, spoken to your technician, and resolved the situation. Here is what you were told and how you solved the problem.

- On June 12, 12:15 p.m., our customer service centre received a call about a power outage at a residential dwelling in the west end of Morebrook. The call was forwarded to our department. A check of our grid monitors showed normal readings and output. I determined the problem was localized. At 12:30 p.m., I dispatched technician, Terry Raoul, to the location given: 1345 Springbrook Crescent. Terry is one of our best technicians – he is friendly, he knows his stuff, and he's a lot of fun to be with. We play hockey every Saturday. When he arrived, Terry spoke with homeowner Martin Sims. Mr. Sims indicated that his electricity was on when he left at 9:30 a.m. When he returned at about noon, his entire house was without power. Terry checked the electrical panel and service of the residence and found them to be in working order. He conducted an inspection of the overhead feeder lines and found them to be in good condition, however, he discovered a non-functioning drop [overhead wire]. Following procedure, Terry wrote up a work order and gave it to the customer, explaining that the problem would be fixed at central switching and that electricity to the home would be restored within the hour. The customer seemed fine with the explanation, according to Terry; however, soon after Terry phoned dispatch to say he was on to the next job, our customer service centre received a call from Martin Sims. He was very angry. The operator said he was fuming. In fact, she apologized for transferring the call. But that's Margie, she's a doll. I talked to Mr. Sims, but it took me a minute to understand him. I had to ask him to calm down a few times. What I heard was something about the technician being very rude, and there was no way he was putting up with that from anyone. I'm thinking that I have never seen a rude bone in Terry's body. So, I asked Mr. Sims what happened. He said the work order was a joke, that Terry didn't take him seriously and had told him off, in writing. I think back to Terry's call – he told me he needed a work order put in to central switching. It sounded like he took it seriously to me. I asked Mr. Sims what the work order said. He read it to me. I snickered. Mr.Sims didn't like it. I apologized and explained that Terry wasn't being rude. He was just using the technical term for the problem. Once I explained the term, Mr.Sims got very quiet. He apologized. He even laughed, and while I was on the phone, his power came back on. So, he hung up happy. I told Terry, though, when he got back that he owed me big for saving his butt from a reprimand. He looked surprised when I told him his work order nearly put him on report. He wanted to know what Mr. Sims didn't like. I told him it was his description of the problem: Power Out. Drop Dead.

REPORTING A WORKPLACE ACCIDENT

Learner Worksheet

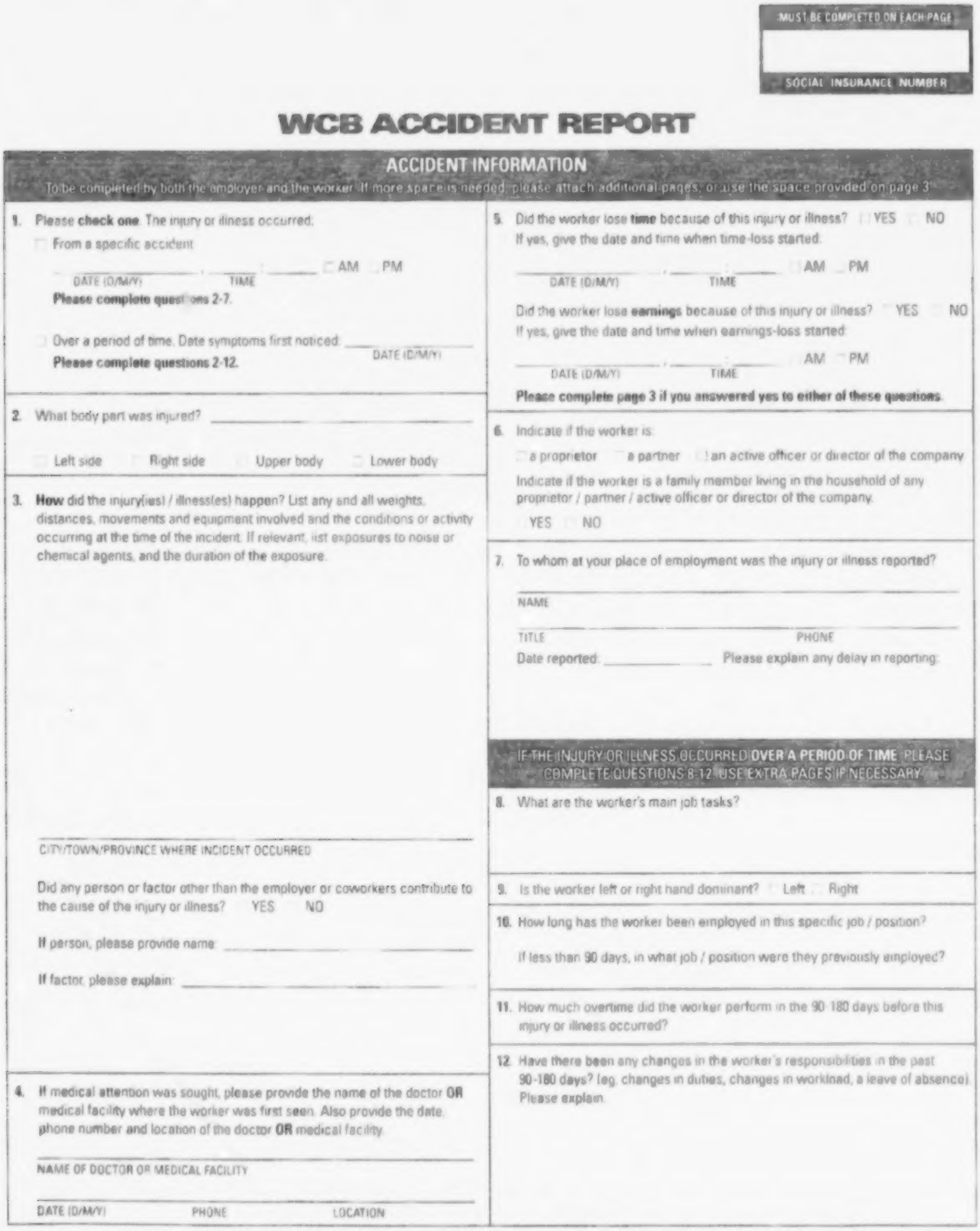
Fill out an accident report form based on the information provided by the diagram.


LANYARD FASTENED TO LIFELINE
SAFETY LANYARD NOT IN USE
FREE LINE
FREE LINE
LIFELINE
LANYARD HOLDING THIS WORKER
HITCH OR HOOK FAILED
FREE LINE

REPORTING A WORKPLACE ACCIDENT: Entry Form

APPENDIX 6B

Learner Worksheet



MUST BE COMPLETED ON EACH PAGE

SOCIAL INSURANCE NUMBER

WCB ACCIDENT REPORT

ACCIDENT INFORMATION

To be completed by both the employer and the worker. If more space is needed, please attach additional pages, or use the space provided on page 3.

1. Please **check one**. The injury or illness occurred:

☐ From a specific accident

_______ , _______ : _______ ☐ AM ☐ PM
DATE (D/M/Y) TIME

Please complete questions 2-7.

☐ Over a period of time. Date symptoms first noticed: _______
DATE (D/M/Y)

Please complete questions 2-12.

2. What body part was injured? _______

☐ Left side ☐ Right side ☐ Upper body ☐ Lower body

3. **How** did the injury(ies) / illness(es) happen? List any and all weights, distances, movements and equipment involved and the conditions or activity occurring at the time of the incident. If relevant, list exposures to noise or chemical agents, and the duration of the exposure.

____
CITY/TOWN/PROVINCE WHERE INCIDENT OCCURRED

Did any person or factor other than the employer or coworkers contribute to the cause of the injury or illness? ☐ YES ☐ NO

If person, please provide name: _______

If factor, please explain: _______

4. If medical attention was sought, please provide the name of the doctor **OR** medical facility where the worker was first seen. Also provide the date, phone number and location of the doctor **OR** medical facility.

____
NAME OF DOCTOR OR MEDICAL FACILITY

____
DATE (D/M/Y) PHONE LOCATION

5. Did the worker lose **time** because of this injury or illness? ☐ YES ☐ NO
If yes, give the date and time when time-loss started.

_______ , _______ : _______ ☐ AM ☐ PM
DATE (D/M/Y) TIME

Did the worker lose **earnings** because of this injury or illness? ☐ YES ☐ NO
If yes, give the date and time when earnings-loss started.

_______ , _______ : _______ ☐ AM ☐ PM
DATE (D/M/Y) TIME

Please complete page 3 if you answered yes to either of these questions.

6. Indicate if the worker is:

☐ a proprietor ☐ a partner ☐ an active officer or director of the company

Indicate if the worker is a family member living in the household of any proprietor / partner / active officer or director of the company.

☐ YES ☐ NO

7. To whom at your place of employment was the injury or illness reported?

____
NAME

____
TITLE PHONE

Date reported: _______ Please explain any delay in reporting:

IF THE INJURY OR ILLNESS OCCURRED OVER A PERIOD OF TIME, PLEASE COMPLETE QUESTIONS 8-12. USE EXTRA PAGES IF NECESSARY.

8. What are the worker's main job tasks?

9. Is the worker left or right hand dominant? ☐ Left ☐ Right

10. How long has the worker been employed in this specific job / position?

If less than 90 days, in what job / position were they previously employed?

11. How much overtime did the worker perform in the 90-180 days before this injury or illness occurred?

12. Have there been any changes in the worker's responsibilities in the past 90-180 days? (eg. changes in duties, changes in workload, a leave of absence) Please explain.

TRAINING REQUEST

Learner Worksheet

Examine the Apprenticeship Training Request Form below. Make a list of Primary Information, Secondary Information, and spaces to leave blank.

APPRENTICESHIP TRAINING REQUEST FORM

To request training, please complete this form and return or fax to the address above. Your Industrial Training and Certification Officer will contact you to confirm seat availability and your eligibility for the requested training. It is important to register for technical training as soon as possible as seats are assigned on a first-come basis within each country.

PLEASE PRINT

Full Name ____
First Name Middle Name Last Name

Address ____

City/Town ______________ County ______________ Province __________

Postal Code __________ Home Phone __________ Business Phone __________

Trade ____________________ Employer Signature ______________

Industrial Training and Certification Officer ______________________

I wish to register for the following training:

First Choice	**Second Choice**
____________________	____________________
____________________	____________________
Date(s) ______________	Date(s) ______________
Location ______________	Location ______________

OFFICE USE ONLY

Date(s) Client/Employer Contacted ______________________

Client approved for training Y N Course Offer #s ______________

Schedule for above training Y N Wait List for above training Y N

Forward for data entry Client scheduled/waitlisted

FILLING IN A TIME CARD

Learner Worksheet

Complete the time card.

Employee Name: ______________________

Week Ending: ______________________

Employee Number: ______________________

Job Number	Cost Code	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Total	
		Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T	Reg	O/T

Employee Signature: ______________________

Supervisor Signature: ______________________

Document Use
Refresher
For Apprentices

PROCEDURAL MANUALS

Module 7

NOVA SCOTIA
Department of Education
Apprenticeship Training and
Skill Development

nscc

Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

INTRODUCTION

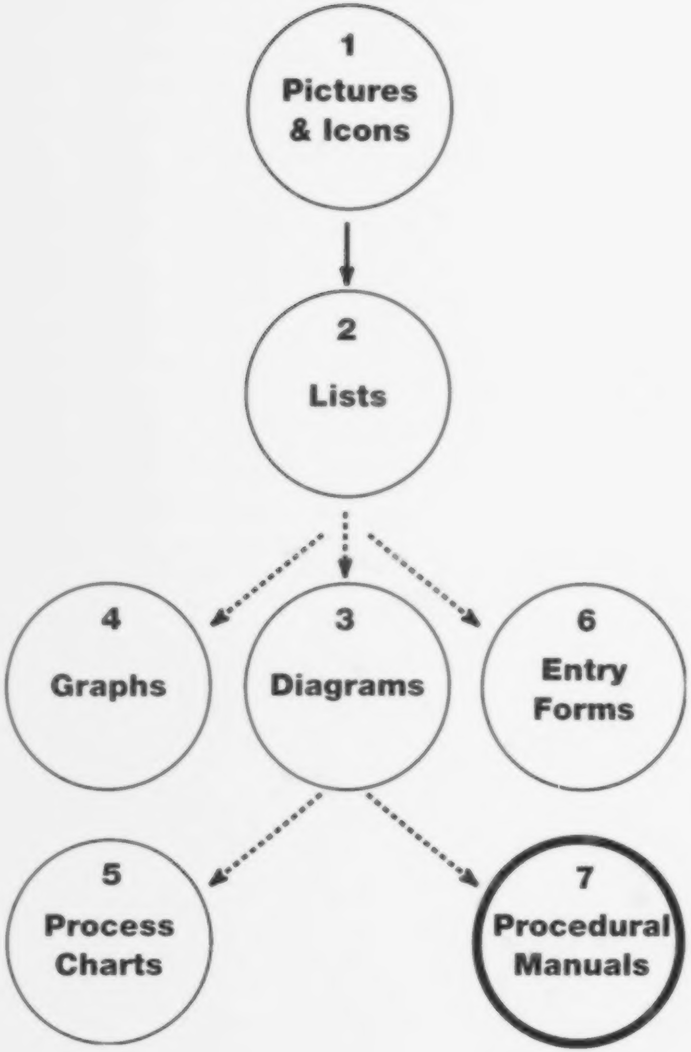
This module contains teaching and learning strategies applicable to all levels of document use, from the simple to the complex. It is understood that some modules may need to be shortened or eliminated to meet time restrictions or student requirements. This module should be completed in its entirety to ensure all learners have the knowledge and confidence needed to tackle more challenging documents.

Recommended Teaching Sequence

Module 1: Pictures and Icons should be the first module your learners complete.

Module 2: Lists should be second. These are the two foundation modules upon which all other instruction in this course is built.

The remaining five modules may be done in varying order, depending on the needs of your learners. The chart to the right depicts the suggested sequence. After *Module 2: Lists*, you may introduce either *Module 3: Diagrams*, *Module 4: Graphs*, or *Module 6: Entry Forms*. It is recommended that learners complete Module 3: Diagrams before completing *Module 5: Process Charts* or *Module 7: Procedural Manuals*.



Outline

This teaching resource has been designed to guide your interaction with learners, whether you are a group instructor or a peer mentor. Where possible, supplement this resource with information and activities from your own experience and those shared by your learners.

Following are teaching strategies, suggested learning and assessment activities, sample documents, and activity worksheets. Please note, and reassure your learners, that the assessment activities are designed to reinforce their skills and guide your instruction. There are no tests or marks; there are no passing or failing grades.

Be sure to refer to the Instructor's Manual while preparing for and delivering this course. The Instructor's Manual outlines this resource's guiding philosophy while providing useful background information and other details.

Objectives

Having completed instructional materials and activities Learners will be able to:

Define procedural manuals as organizers of information to be used to locate information.

Locate, identify and use the essential tools such as table of contents, index, How to Use this Book section, for locating information in a procedural manual.

Locate, identify and use the supporting tools such as glossary, appendices, page dividers, tables, graphs, and diagrams, for locating information in a procedural manual

Identify and use basic text organizers such as titles, bolding, underlining, and indenting.

Apply knowledge of procedural manuals workplace documents.

To the Instructor...

Suggested Prerequisites:

- Apprentice or journeyperson in the trades
- Grade 9 education or equivalent
- Module 1: Pictures and Icons, Document Use Refresher for Apprentices
- Module 2: Lists, Document Use Refresher for Apprentices
- Module 3: Diagrams, Document Use Refresher for Apprentices

Instructor Materials:

- Module 7 teaching resources, including sample documents and activity worksheets
- Optional: flipchart or whiteboard, markers, overhead projector
- Optional: your samples of relevant documents

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TYPES AND PURPOSES

Procedural manuals contain the most pages, words, and diverse content of documents covered this refresher. This topic emphasizes that the purpose of procedural manuals is the same as lists, diagrams, graphs and process charts. All aid in organizing and locating information.

Strategies for Instruction

- Revisit the building blocks: pictures/icons and lists. Review how these elements are found in all workplace documents, from the simple to the complex.

- Reinforce the method for locating information needed from these documents:
    - Identify the information you need.
    - Locate the label to discover the information the document can provide.
    - Examine the pictures and icons.
    - Use lists and legends.

- Introduce the term procedural manual. A Procedural Manual is a document to provide clear instruction, steps or sequences, are followed. Explain that a procedural manual is often the largest and most complex of workplace documents. Whether in print or electronic form, many job sites require the use of some type of manual.

- Gain feedback on the types of procedural manuals used or seen by learners. Discuss common examples, such as a telephone book, workplace regulations, collective agreements, vehicle operating manual, Occupational Health and Safety standards, trade-specific code books, equipment installation and repair manuals, annual reports, reference books, and course texts.
  NOTE: There are some sample pages from procedural manuals included in this resource, but entire procedural manuals could not be included. Where possible, supplement this resource with actual procedural manuals that you provide or that are brought in by the learners.

- Identify and discuss problems encountered when using procedural manuals. Reinforce that the purpose of a procedural manual is to organize information, not to provide entertainment or light reading. The user's goal is to locate a specific piece of information quickly. Explain that strategies learned in the use of previous documents will also apply here, as manuals are also combinations of pictures/icons and lists. Demonstrate quickly with *Appendix B: Canadian Electrical Code (page 273)*, explaining that details are coming in the next topic.

- Empathize with learners who have encountered poorly written or organized manuals. Point out that strategies learned in this section are meant to aid learners in working with procedural manuals.

Supporting Documents

App. B: CEC (page 273)

Activities

Manual Log

Learner Worksheet (page 288)

Have learners use this worksheet to create a combined list including examples of manuals they have used, the importance of this manual to their job, any elements that you liked about it, and any problems encountered with its use. Use the information gained here to direct upcoming topics and to gain sources for sample documents. Encourage learners to share any documents sample documents.

Activity Worksheets

Manual Log (p288)

ESSENTIAL TOOLS

Procedural manuals are reference books, designed to share a specific piece of information quickly. This topic introduces the primary search tools used to locate information, the table of contents and the index. Also introduced is How to Use this Book or similar sections included in some manuals.

Strategies for Instruction

- Review key concepts:
  - The purpose of a procedural manual is to hold and organize information.
  - A procedural manual contains pictures, icons and lists, which are the same building blocks found in other workplace documents.

- Explain that the key to effective manual use is to find the necessary information quickly. Manuals are not designed to be read cover to cover. Ask learners to think of a phone book, dictionary, or vehicle operating manual. In using these documents a small piece of information is all that is needed.

- Explain that information contained in a procedural manual is of two general types: subject content (the mass of information) and search tools (table of contents, index etc.). This module focuses on the search tools.

- Revisit lists as an important component of manuals, both for subject matter and search. Lists are the key to unlocking and finding information contained in manuals. Proper use of lists allows a procedural manual of any size can be used quickly and efficiently.

- Introduce primary search tools: table of contents and index. These tools are used to provide access to the content information.

Table of Contents

- Point out that a table of contents is found in the front of the manual. Emphasize that this should be the first resource in searching for information.

- Gain feedback from the learners on previous knowledge and experience with tables of contents. Ask who has seen or used one. Acknowledge that many manual users skip the table of contents in favour of flipping through page by page. Emphasize that learning to use a table of contents can help locate specific information more quickly.

- Using *Table of Contents: Millwright Manual (page 274)*, *Chapter Table of Contents: Millwright Manual (page 275)* and *Table of Contents: Canadian Electrical Code (page 276)*, identify a table of contents as a combined list. Review the pattern of a combined list in the context of a table of contents:
    - It maintains simple list structure as the label and related items are the first column.
    - The second and subsequent columns relate to the first column.
    - Read horizontally, the list flows as a sentence.

- Point out how a table of contents is a relationship list. All topics and chapters relate to the contents of the manual. The list is comprised of all major divisions of the manual.

- Identify a table of contents as a numerical sequence. Point out how topics are listed from the first page to the last page.

- Use the samples to show the different level of detail in a table of contents. Detailed lists include headings or subjects within chapters, allowing quick identification of a specific piece of information. Some tables of contents include less detail; in those cases, a chapter title is a clue to the information contained inside.

Supporting Documents

Contents Millwright (page 274)

Chapter: Millwright (page 275)

Contents CEC (page 276)

Activities

Using the Table of Contents

Learner Worksheet (page 289)

The worksheet includes a sample table of contents and the following assignment [answers in brackets]:

1. On what page does Section 10 begin? [85]
2. Where would you look for the history and operation of the CEC Code, Part 1? [31]
3. On what page would you find information on metering equipment? [73]
4. What information would you find on page 58? [Enclosures]
5. What information would you find on page 93? [Methods of Grounding]

Supplemental Activity

Have learners use a manual of their choice; ask the learners to locate a number of specific pieces of information. It is best to start with information that can be found using main headings and progress to subheadings.

Activity Worksheets

Table of Contents (p289)

Index

- Explain that an index is a detailed list found in manuals and other reference sources, such as maps. Gain feedback on previous knowledge. Ask who has seen or used an index. Ask learners to describe an index and identify the information contained in one. Again, acknowledge that an index is often overlooked in manual use. Explain that an index can reduce the time required to find specific pieces of information, no matter how large or complex the manual.

- Demonstrate association lists using the *Index: Canadian Electrical Code (page 277)*, *Index: Map of Labrador (page 278)*, and *Index: Telephone Directory (page 279)*. Point out how an index is an association list in which pages are grouped alphabetically according to subject headings.

- Emphasize that the first step in using an index is settling on a word or subject to locate. Demonstrate with the topic Elevator Repair.

- Introduce an alphabetical index. Show how to locate information using the Index: Canadian Electrical Code (page 277).

- Introduce a subject index. Show how to locate information by subject using *Index: Telephone Directory (page 279)*.

- Explain that an index is different from a table of contents. An index organizes content by subject and provides page numbers. Point out how an index can be useful when seeking a specific piece of information – a page can be quickly found and related pages can also be located quickly.

- Point out that these search elements help sort the subject matter contained in the manual. The subject matter is usually a combination of pictures/icons, diagrams, graphs, and text. Reinforce the concept that searching the subject matter involves the same patterns used for understanding these separate elements. In procedural manuals know the information you need and use the search lists to find it.

Supporting Documents

Index: CEC (page 277)

Index: Map of Labrador (page 278)

Index: Telephone Dir. (page 279)

Activities

Association List Telephone Directory

Learner Worksheet (page 290)

Have learners complete the worksheet, which contains a telephone directory index and the following assignment [answers in brackets]:

Find page numbers for the following listings:
- Dust Control Materials [56]
- First Aid Services [62]
- Enviro-Depots [128]
- Extinguishers- Fire [62]

Activity Worksheets

Association List Tele. Dir. (p290)

How To Use This Book

Introduce a third tool the How to Use this Book or a similarly described section, that is included in some complex manuals. Revisit *Table of Contents: Canadian Electrical Code (page 276).*
Note the General Arrangement listing on page 35. This section explains the numbering system, subdivision of rules, and icons used. [see *General Arrangement: Canadian Electrical Code (page 280)*]
Note the use of icons to highlight information that has been added to or deleted from previous editions. [See *Electric Heating and Cooking Appliances: Canadian Electrical Code (page 281)*] This ordering system is useful when seeking new information quickly.

Supporting Documents

Cont: CEC (page 276)

Gen. Arrangement: CEC (page 280)

Electric Heating (page 281

SUPPORTING SEARCH TOOLS

This topic introduces appendices, glossary, formatting, and graphic elements that assist in finding and understanding information within a procedural manual.

Strategies for Instruction

- Review the concepts covered to date:
    - A manual's purpose is to hold and organize information.
    - A manual contains pictures/icons and lists, the same building blocks as in other workplace documents.
    - Information in a manual is of two general types: subject matter and search tools.
    - Primary search tools are the table of contents at the beginning of the manual and the index at the back of the manual. Some manuals also include a How To Use This Book section, which contains instructions, icons, and definitions that can assist in using the manual. On-line or computerized manuals contain search functions using key words or titles.
    - Search tools reduce the need for memorization and the time it takes to locate information.

- Gain feedback, or revisit from earlier conversations, the challenges learners face when using procedural manuals. Discuss any issues raised. Explain that the toolbox started in the previous topic will be enhanced with the following instructions.

- Introduce glossary. Point out that this section can also be called definitions. Gain feedback on previous knowledge. Ask who has seen or used a glossary. Using *Glossary: Canadian Electrical Code (page 282)*, and the glossary from this teaching resource, Instructor's Guide, note that a glossary is a mini-dictionary with terms specific to the subject of the manual. A glossary is a useful reference to define unknown words encountered in the text. Point out that in some cases words included in the glossary will be bolded, italicized, or otherwise marked. Acknowledge that a glossary is not included in every manual nor is it always located in the same place in the text. The table of contents will reveal a glossary's presence or location.

Supporting Documents

Glossary: CEC (page 282)

- Introduce appendix. Explain that detailed manuals often use an appendix or appendices to organize information related to the main text or detailed information on a specific topic. Present *Appendices Listing: Canadian Electrical Code (page 283)* to illustrate the use of appendices. Again, acknowledge that not all manuals have appendix items. Point out how the table of contents should show whether there is an appendix, and if so, what items can be found there.

- Introduce section tabs. Point out that section tabs are often included in manuals to allow the user to quickly specific chapters or sections. Present *Section 70: Canadian Electrical Code (page 284)* to show how a manual may use a section tab. In this example, the section number is included in a shaded square in the right margin. Point out that section tabs may also be physical dividers, as in a binder.

- Explain that section tabs are ordered in sequence. Point out that tabs may be marked by subject, chapter, number, or colour. Once the tab pattern in known, the tab can be used to locate a section quickly. Demonstrate with Section 70: Canadian Electrical Code. Reinforce how the section number in the tab is included in eachsubtitle i.e. 70-100 or 70-102.

- Introduce tables, graphs, and diagrams as part of the appendices content. Point out that these elements may be supplemented with text, as in *Appendix B: Canadian Electrical Code (page 273)* or may be included in a separate section or appendix. If in a separate section, an index [see *Table Listing, Canadian Electrical Code (page 276)*] to locate a specific table, graph, or diagram may be used.

- Review the concept that tables are lists, and that graphs and diagrams are a combination of pictures and lists. All are used to organize information for quick access. Reinforce the patterns used for lists, graphs, and diagrams, as learned in previous modules.

Supporting Documents

App. Listing: CEC (page 283)

Section 70: CEC (page 284)

Appendix B: CEC (page 273)

Table Listing: CEC (page 276)

- Introduce visual cues to organizing text. Titles, subtitles, bold words, underlining, and indenting are among the common formatting techniques used to highlight and organize information. Demonstrate how a title or subtitle quickly identifies the content that follows. Revisit *Electric Heating and Cooking Appliances (page 281)*, point out the subtitles, bolded words, and indented lists. Review the *Fall Protection: Occupational Health and Safety Regulation (page 286)*, point out the title and the italicized subtitles in the left margin to identify each section.

- Have learners identify what information they need before they search the manual. Is it a number, a fact, a definition, or an explanation? This shows whether they need a table, glossary, appendix, or chapter. This narrows the search saving time and energy.

Supporting Documents

ELECTRIC HEATING AND COOKING APPLIANCES:

Electric Heating (page 281)

FALL PROTECTION:

Fall Protection (page 286)

Activities

Supporting Tools

Learner Worksheet (page 291)

This activity asks learners to use the following sample documents:

- *Index: Canadian Electrical Code (page 277)*
- *General Arrangement: Canadian Electrical Code (page 280)*
- *Electric Heating and Cooking Appliances: Canadian Electrical Code (page 281)*
- *Glossary: Canadian Electrical Code (page 282)*
- *Appendices listing: Canadian Electrical Code (page 283)*
- *Section 70: Canadian Electrical Code (page 284)*
- *Tables listing: Canadian Electrical Code (page 285)*

The worksheet includes the following assignment [answers in brackets]:

1. You are working in a dust free room in a relocatable structure.
   - What is the definition of a relocatable structure? [see *Glossary: Canadian Electrical Code*]
   - What section of the Canadian Electrical Code covers relocatable structures? [see *Section 70: Canadian Electrical Code*]
   - Where would you find specifications for wiring a dust free room? [See *Index: Canadian Electrical Code* or *Appendices listing: Canadian Electrical Code*]

2. You are wiring a separate built-in cooking unit.
   - You have the 1994 and 1998 Canadian Electrical Code Books; would it matter which one you used in this wiring job?[Yes. There are additions in the 1998 Code, as indicated by the icon in the left margin]
   - Where would you find the information you need about the ampere rating of the unit or heating element? [See *Electric Heating and Cooking Appliances: Canadian Electrical Code* or *Tables listing: Canadian Electrical Code*]

Activity Worksheets

Supporting Tools (p291)

ADDITIONAL LEARNING ACTIVITIES

Manual Patterns

Learner Worksheet (page 292)

Becoming familiar with a manual's function and design should help to reduce fear. With a manual provided by the learner or yourself, have the learner find the essential and supporting tools as described in this module. This worksheet provides the learner with a log to keep track of their findings.

Referencing Fall Protection

Learner Worksheet (page 293)

This worksheet includes an excerpt of Fall Protection regulations and the following assignment [answers in brackets]:

1. What are the subtitles which appear on this page? [Obligation to use fall protection; Fall protection plan; Instruction of workers]
2. What section number of the OH&S regulations is being shown here? [11]
3. What information is contained in section 11.3 (3) (d)? [Procedure for rescue of a worker who has fallen …]
4. In what section would you expect to find information about an employer's responsibility for training? [11.4]

Activity Worksheets

Manual Patterns (p292)

Ref. Fall Protection (p293)

Recognizing Visual Cues

Learner Worksheet (page 294)

This worksheet asks learners to use *General Arrangement (page 280)* and *Electric Heating and Cooking Appliances (page 281) from the Canadian Electrical Code* and complete the assignment [answers in brackets]:

1. What head and subhead(s) appear on page 35? [Head: Canadian Electrical Code, Part I][Subhead: General Arrangements]
2. How many rules appear for Electrical Heating and Cooking Appliances? [3]
3. What new information has been added to this edition of the document? [26-742 Separate Built-in Cooking Units]
4. How many pieces of information were deleted since the last edition? [3]
5. What section of the Canadian Electrical Code contains information on Electrical Heating and Cooking Appliances? [26]

Activity Worksheets

REFERENCING FALL PROTECTION

Recognizing Visual Cues (p294)

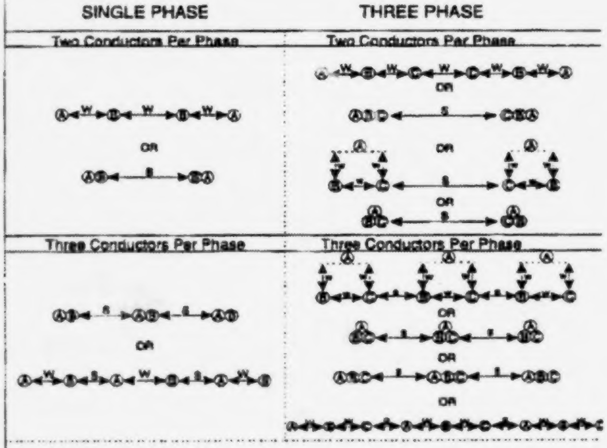
Document Use
Refresher
For Apprentices

SUPPORTING DOCUMENTS

Module 7

Appendix 7A

CONFIGURATIONS FOR THE INSTALLATION OF PARALLEL SINGLE CONDUCTOR CABLES



W ≥ 1 CABLE DIAMETER
S ≥ 2 CABLE DIAMETERS
NEUTRAL MAY BE LOCATED OUTSIDE OF THE ABOVE GROUPS IN MOST CONVENIENT LOCATION

NOTE: *All above configurations may not result in equal ampacity on division of current for all cable systems (see also Rule 4-008).*

12-116 *Solderless wire connectors or their cartons are identified as follows:*

- *(a) "Solid" or equivalent for conductor sizes Nos. 18, 16, and 8 AWG and larger;*
- *(b) "Stranded" or equivalent for conductor sizes Nos. 14 to 10 AWG;*
- *(c) If not so marked, they are suitable for connecting stranded conductors in sizes Nos. 18, 16, and 8 AWG anc larger, and solid conductors in sizes Nos. 14 to 10 AWG.*

A wire connector marked as indicated in Paragraph (a) or (b) is suitable for use with the marked type of construction only.

12-504 *The specific details for buildings of noncombustible construction are located in Part 3 of the* National Building Code *or in the appropriate Provincial/Territorial Legislation.*

Δ 12-602 *The steel wire armour (SWA) used in cables features inherently different mechanical characteristics than conventional interlocked armour. Steel wire armour, due to its physical structure, provides high tensile strength but may*

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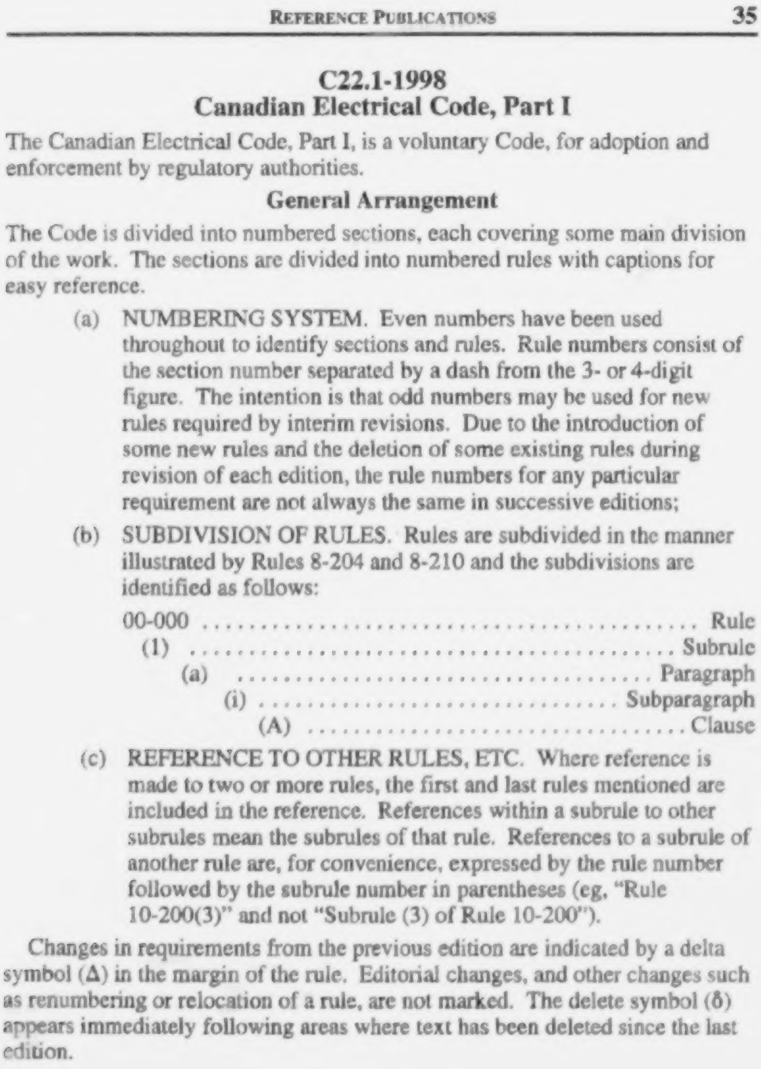


C22.1-1998
Canadian Electrical Code, Part I

The Canadian Electrical Code, Part I, is a voluntary Code, for adoption and enforcement by regulatory authorities.

General Arrangement

The Code is divided into numbered sections, each covering some main division of the work. The sections are divided into numbered rules with captions for easy reference.

(a) NUMBERING SYSTEM. Even numbers have been used throughout to identify sections and rules. Rule numbers consist of the section number separated by a dash from the 3- or 4-digit figure. The intention is that odd numbers may be used for new rules required by interim revisions. Due to the introduction of some new rules and the deletion of some existing rules during revision of each edition, the rule numbers for any particular requirement are not always the same in successive editions;

(b) SUBDIVISION OF RULES. Rules are subdivided in the manner illustrated by Rules 8-204 and 8-210 and the subdivisions are identified as follows:

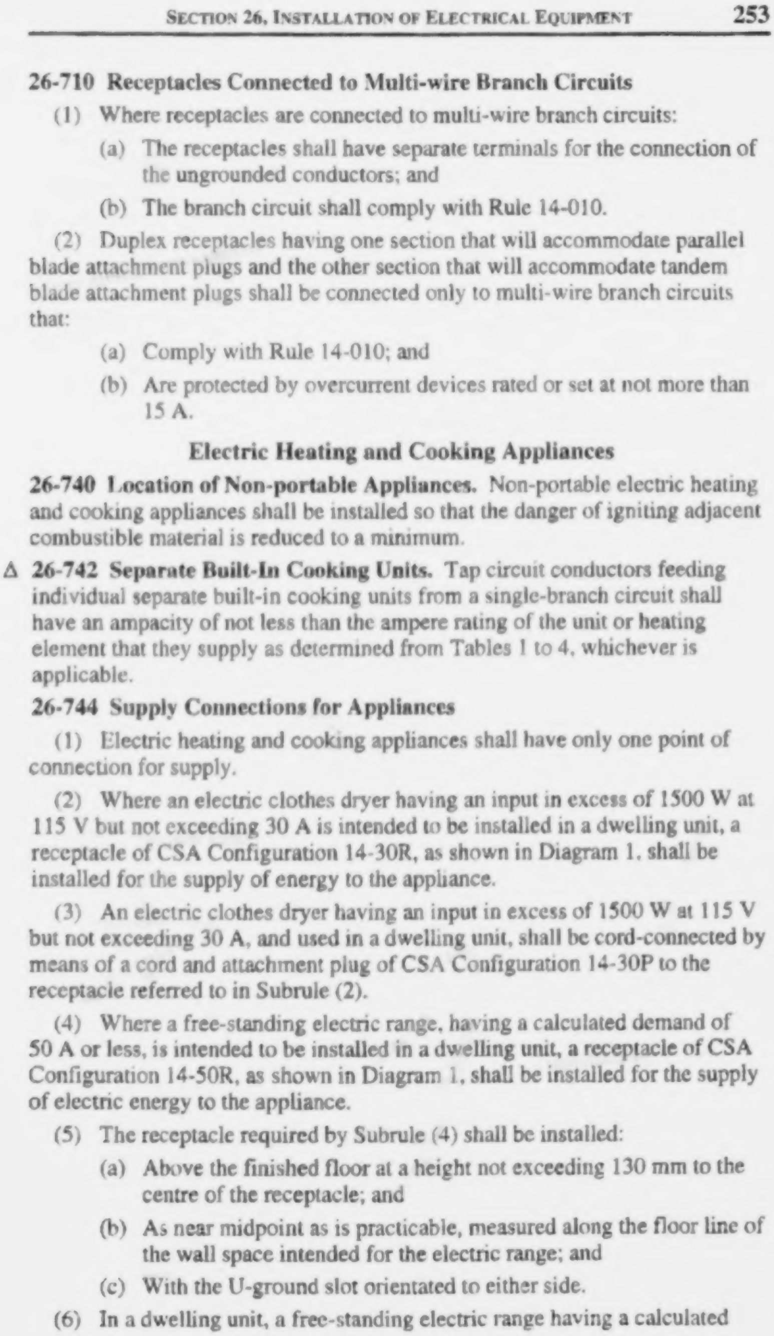
00-000 .... Rule
  (1) .... Subrule
    (a) .... Paragraph
      (i) .... Subparagraph
        (A) .... Clause

(c) REFERENCE TO OTHER RULES, ETC. Where reference is made to two or more rules, the first and last rules mentioned are included in the reference. References within a subrule to other subrules mean the subrules of that rule. References to a subrule of another rule are, for convenience, expressed by the rule number followed by the subrule number in parentheses (eg, "Rule 10-200(3)" and not "Subrule (3) of Rule 10-200").

Changes in requirements from the previous edition are indicated by a delta symbol (Δ) in the margin of the rule. Editorial changes, and other changes such as renumbering or relocation of a rule, are not marked. The delete symbol (δ) appears immediately following areas where text has been deleted since the last edition.

ELECTRIC HEATING AND COOKING APPLIANCES:

Canadian Electrical Code



26-710 Receptacles Connected to Multi-wire Branch Circuits

(1) Where receptacles are connected to multi-wire branch circuits:

- (a) The receptacles shall have separate terminals for the connection of the ungrounded conductors; and
- (b) The branch circuit shall comply with Rule 14-010.

(2) Duplex receptacles having one section that will accommodate parallel blade attachment plugs and the other section that will accommodate tandem blade attachment plugs shall be connected only to multi-wire branch circuits that:

- (a) Comply with Rule 14-010; and
- (b) Are protected by overcurrent devices rated or set at not more than 15 A.

Electric Heating and Cooking Appliances

26-740 Location of Non-portable Appliances. Non-portable electric heating and cooking appliances shall be installed so that the danger of igniting adjacent combustible material is reduced to a minimum.

δ Δ **26-742 Separate Built-In Cooking Units.** Tap circuit conductors feeding individual separate built-in cooking units from a single-branch circuit shall have an ampacity of not less than the ampere rating of the unit or heating element that they supply as determined from Tables 1 to 4, whichever is applicable.

δ **26-744 Supply Connections for Appliances**

(1) Electric heating and cooking appliances shall have only one point of connection for supply.

δ (2) Where an electric clothes dryer having an input in excess of 1500 W at 115 V but not exceeding 30 A is intended to be installed in a dwelling unit, a receptacle of CSA Configuration 14-30R, as shown in Diagram 1, shall be installed for the supply of energy to the appliance.

(3) An electric clothes dryer having an input in excess of 1500 W at 115 V but not exceeding 30 A, and used in a dwelling unit, shall be cord-connected by means of a cord and attachment plug of CSA Configuration 14-30P to the receptacle referred to in Subrule (2).

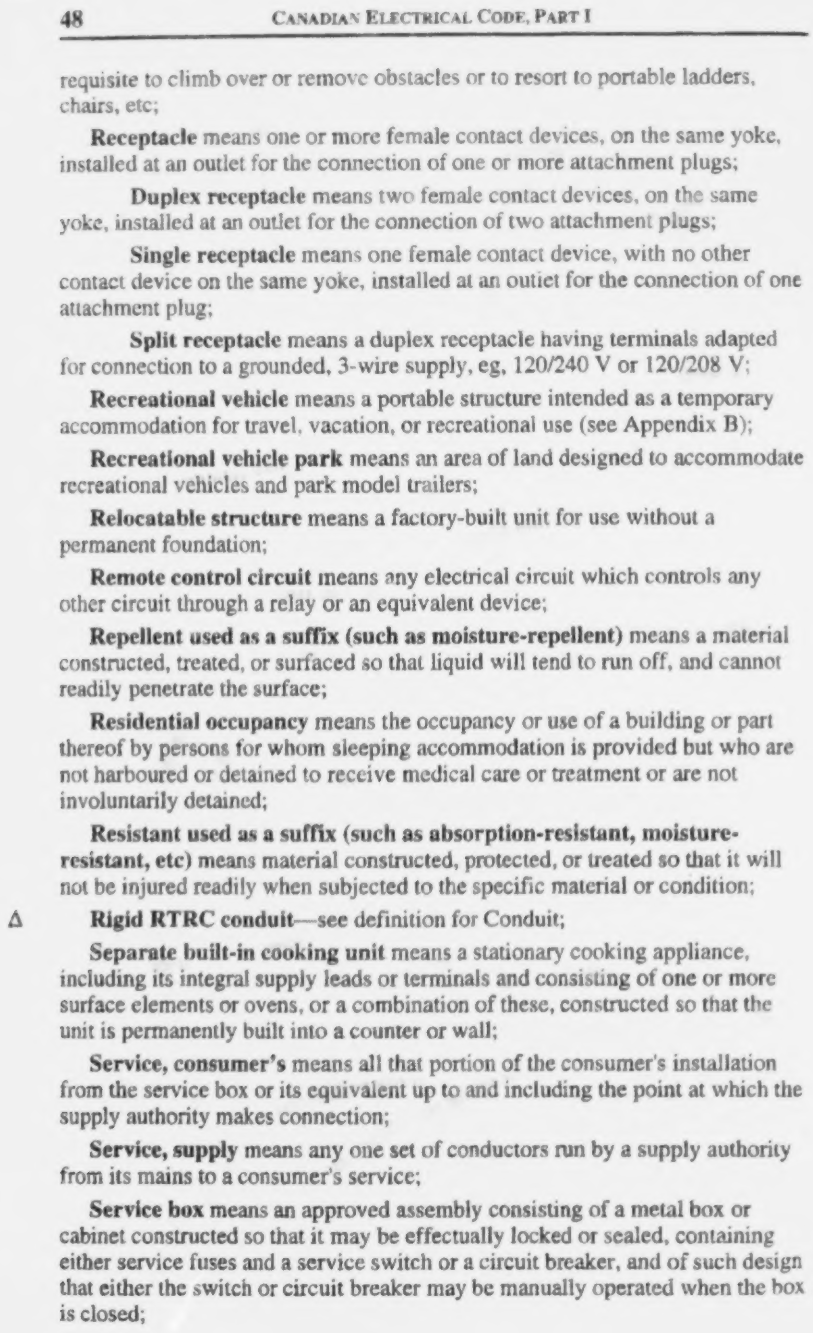
(4) Where a free-standing electric range, having a calculated demand of 50 A or less, is intended to be installed in a dwelling unit, a receptacle of CSA Configuration 14-50R, as shown in Diagram 1, shall be installed for the supply of electric energy to the appliance.

(5) The receptacle required by Subrule (4) shall be installed:

- (a) Above the finished floor at a height not exceeding 130 mm to the centre of the receptacle; and
- (b) As near midpoint as is practicable, measured along the floor line of the wall space intended for the electric range; and
- (c) With the U-ground slot orientated to either side.

(6) In a dwelling unit, a free-standing electric range having a calculated

GLOSSARY:
Canadian Electrical Code



requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc;

Receptacle means one or more female contact devices, on the same yoke, installed at an outlet for the connection of one or more attachment plugs;

Duplex receptacle means two female contact devices, on the same yoke, installed at an outlet for the connection of two attachment plugs;

Single receptacle means one female contact device, with no other contact device on the same yoke, installed at an outlet for the connection of one attachment plug;

Split receptacle means a duplex receptacle having terminals adapted for connection to a grounded, 3-wire supply, eg, 120/240 V or 120/208 V;

Recreational vehicle means a portable structure intended as a temporary accommodation for travel, vacation, or recreational use (see Appendix B);

Recreational vehicle park means an area of land designed to accommodate recreational vehicles and park model trailers;

Relocatable structure means a factory-built unit for use without a permanent foundation;

Remote control circuit means any electrical circuit which controls any other circuit through a relay or an equivalent device;

Repellent used as a suffix (such as moisture-repellent) means a material constructed, treated, or surfaced so that liquid will tend to run off, and cannot readily penetrate the surface;

Residential occupancy means the occupancy or use of a building or part thereof by persons for whom sleeping accommodation is provided but who are not harboured or detained to receive medical care or treatment or are not involuntarily detained;

Resistant used as a suffix (such as absorption-resistant, moisture-resistant, etc) means material constructed, protected, or treated so that it will not be injured readily when subjected to the specific material or condition;

Δ **Rigid RTRC conduit**—see definition for Conduit;

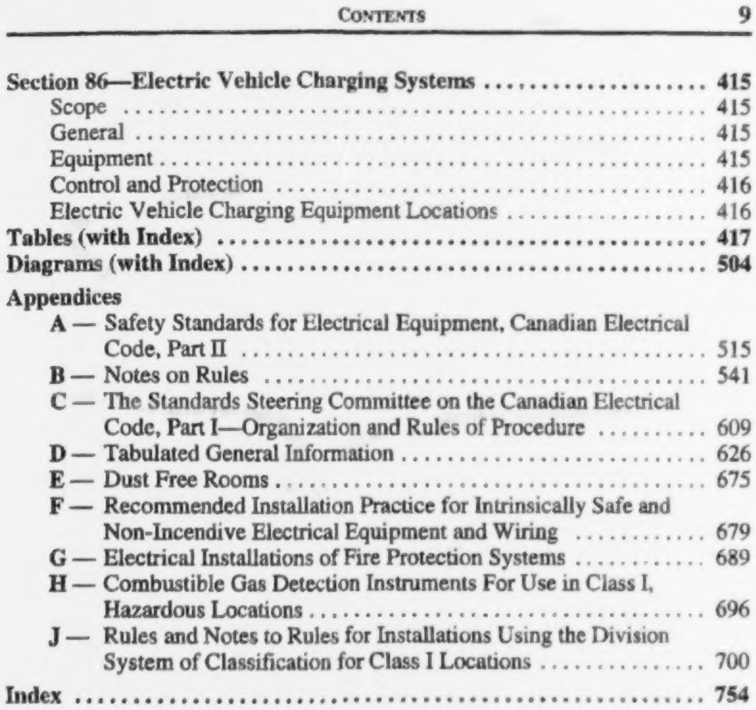
Separate built-in cooking unit means a stationary cooking appliance, including its integral supply leads or terminals and consisting of one or more surface elements or ovens, or a combination of these, constructed so that the unit is permanently built into a counter or wall;

Service, consumer's means all that portion of the consumer's installation from the service box or its equivalent up to and including the point at which the supply authority makes connection;

Service, supply means any one set of conductors run by a supply authority from its mains to a consumer's service;

Service box means an approved assembly consisting of a metal box or cabinet constructed so that it may be effectually locked or sealed, containing either service fuses and a service switch or a circuit breaker, and of such design that either the switch or circuit breaker may be manually operated when the box is closed;

APPENDICES LISTING:
Canadian Electrical Code



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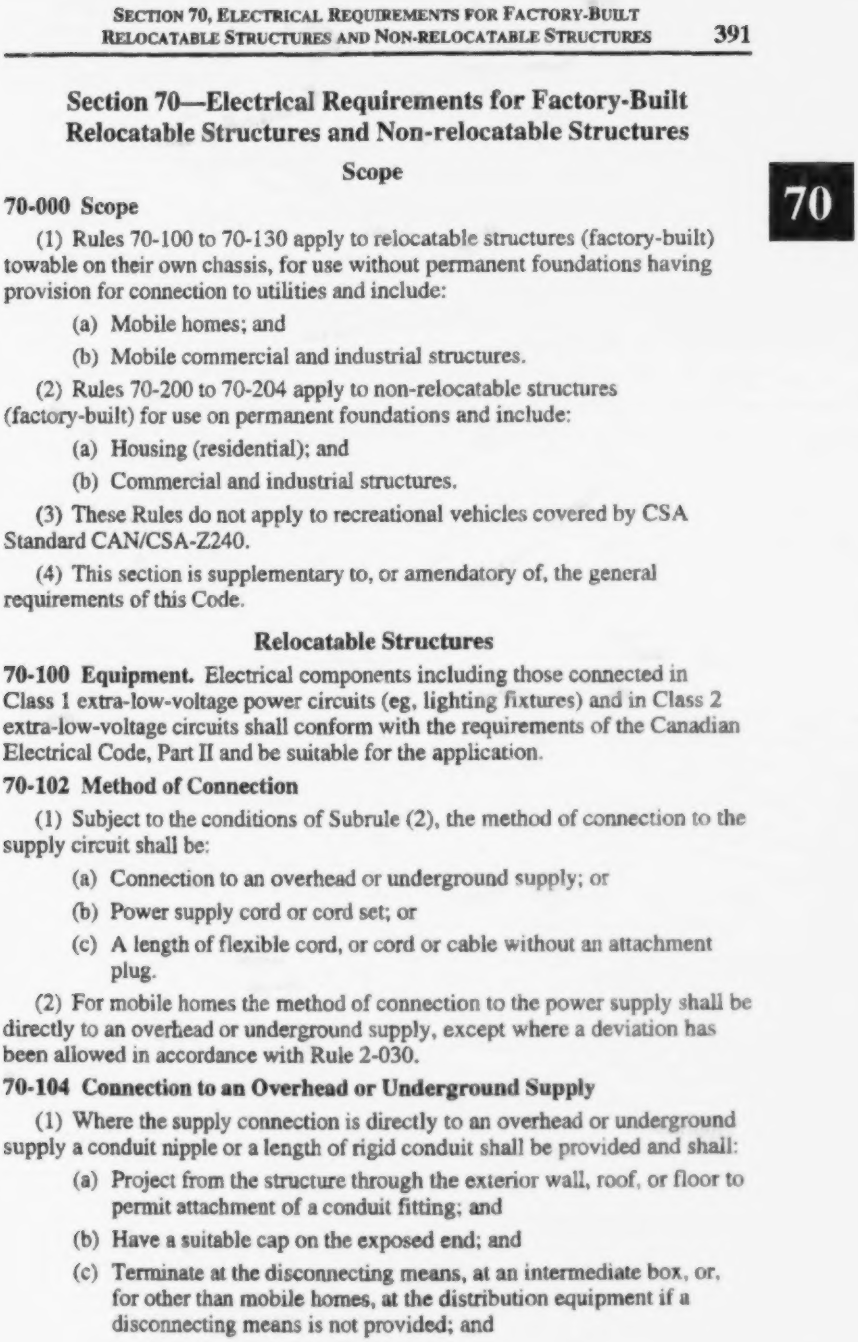

Section 70—Electrical Requirements for Factory-Built Relocatable Structures and Non-relocatable Structures

Scope

70-000 Scope

(1) Rules 70-100 to 70-130 apply to relocatable structures (factory-built) towable on their own chassis, for use without permanent foundations having provision for connection to utilities and include:

(a) Mobile homes; and

(b) Mobile commercial and industrial structures.

(2) Rules 70-200 to 70-204 apply to non-relocatable structures (factory-built) for use on permanent foundations and include:

(a) Housing (residential); and

(b) Commercial and industrial structures.

(3) These Rules do not apply to recreational vehicles covered by CSA Standard CAN/CSA-Z240.

(4) This section is supplementary to, or amendatory of, the general requirements of this Code.

Relocatable Structures

70-100 Equipment. Electrical components including those connected in Class 1 extra-low-voltage power circuits (eg, lighting fixtures) and in Class 2 extra-low-voltage circuits shall conform with the requirements of the Canadian Electrical Code, Part II and be suitable for the application.

70-102 Method of Connection

(1) Subject to the conditions of Subrule (2), the method of connection to the supply circuit shall be:

(a) Connection to an overhead or underground supply; or

(b) Power supply cord or cord set; or

(c) A length of flexible cord, or cord or cable without an attachment plug.

(2) For mobile homes the method of connection to the power supply shall be directly to an overhead or underground supply, except where a deviation has been allowed in accordance with Rule 2-030.

70-104 Connection to an Overhead or Underground Supply

(1) Where the supply connection is directly to an overhead or underground supply a conduit nipple or a length of rigid conduit shall be provided and shall:

(a) Project from the structure through the exterior wall, roof, or floor to permit attachment of a conduit fitting; and

(b) Have a suitable cap on the exposed end; and

(c) Terminate at the disconnecting means, at an intermediate box, or, for other than mobile homes, at the distribution equipment if a disconnecting means is not provided; and

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FALL PROTECTION:

Occupational Health and Safety Regulation

GENERAL REQUIREMENTS

Obligation to use fall protection

11.2 (1) Unless elsewhere provided for in this Regulation, an employer must ensure that a fall protection system is used when work is being done at a place (a) from which a fall of 3 m (10 ft) or more may occur, or (b) where a fall from a lesser height involves an unusual risk of injury.

(2) The employer must ensure that guardrails meeting the requirements of Part 4 (General Conditions) or other similar means of fall restraint are used when practicable.

(3) If the use of guardrails or similar means of fall restraint is not practicable, the employer must ensure that another fall restraint system is used.

(4) If the use of a fall restraint system is not practicable, the employer must ensure that a fall arrest system is used.

(5) If the use of a fall arrest system is not practicable or will result in a hazard greater than if the system was not used, the employer must ensure that

(a) a control zone is used in accordance with this Part,

(b) a safety monitor system with a control zone is used in accordance with this Part, or

(c) other procedures acceptable to the board are followed.

Fall protection plan

11.3 (1) The employer must have a written fall protection plan for a workplace if

(a) work is being done at a location where workers are not protected by permanent guardrails, and from which a fall of 7.5 m (25 ft) or more may occur,

(b) the employer uses a safety monitor and control zone or other work procedures as the means of fall protection, or

(c) the board so directs, because a fall may involve an unusual risk of injury.

(2) The fall protection plan must be available at the workplace before work with a risk of falling begins.

(3) The plan must specify

(a) the fall hazards expected in each work area,

(b) the fall protection system or systems to be used in each area,

(c) the procedures to assemble, maintain, inspect, use and disassemble the fall protection system or systems, and

(d) the procedures for rescue of a worker who has fallen and is suspended by a personal fall protection system or safety net, but is unable to effect self rescue.

Instruction of workers

11.4 Before a worker is allowed into an area where a risk of falling exists, the employer must ensure the worker is instructed in the fall protection system for the area and the procedures to be followed.

Document Use
Refresher
For Apprentices

ACTIVITY WORKSHEETS

Module 7

Appendix 7B

MANUAL LOG

Learner Worksheet

Create a combined list including examples of manuals you have used, the importance of this manual to your job, any elements that you liked about it, and any problems encountered with its use.

Title of Manual	Importance to Job	What I like	Problems with Manual

USING THE TABLE OF CONTENTS

Learner Worksheet

1. On what page does Section 10 begin?
2. Where would you look for the history and operation of the CEC Code, Part 1?
3. What page would you refer to in order to find information on metering equipment?
4. What information would you expect to find on page 58?
5. What information would you expect to find on page 93?

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- Grounding and Bonding Conductor Connections ... 103

ASSOCIATION LIST TELEPHONE DIRECTORY

Learner Worksheet

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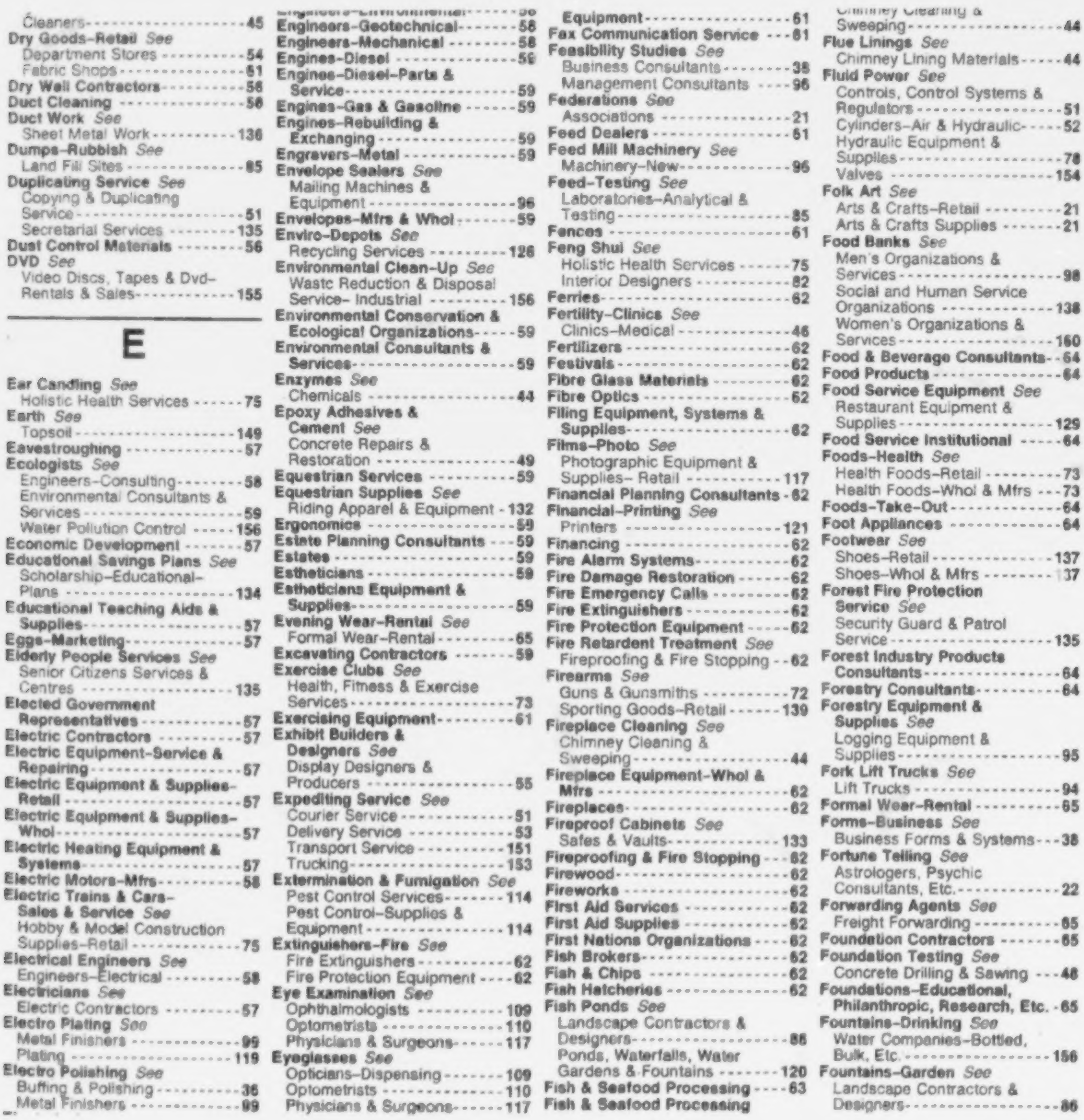
- First Aid Services
- Enviro-depots
- Extinguishers- Fire



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SUPPORTING TOOLS
Learner Worksheet

Use the following sample documents:
- *Index: Canadian Electrical Code (page 277)*
- *General Arrangement: Canadian Electrical Code (page 280)*
- *Electric Heating and Cooking Appliances: Canadian Electrical Code (page 281)*
- *Glossary: Canadian Electrical Code (page 282)*
- *Appendices listing: Canadian Electrical Code (page 283)*
- *Section 70: Canadian Electrical Code (page 284)*
- *Tables listing: Canadian Electrical Code (page 285)*

1. You are working in a dust free room in a relocatable structure.
   - What is the definition of a relocatable structure?
   - What section of the Canadian Electrical Code covers relocatable structures?
   - Where would you find specifications for wiring a dust free room?
2. You are wiring a separate built-in cooking unit.
   - You have the 1994 and 1998 Canadian Electrical Code Books: would it matter which one you used in this wiring job?
   - Where would you find the information you need about the ampere rating of the unit or heating element?

MANUAL PATTERNS

Learner Worksheet

Becoming familiar with a manual's function and design should help to reduce fear. With a manual provided by the instructor or yourself, find the essential and supporting tools as described in this module. This worksheet provides you with a log to keep track of their findings.

Manual Name ____

Element	Present in Manual? (Y or N)	Page Number (if present)
Table of Contents		
Index		
How to Use this Book		
Glossary		
Appendices		
Section Tabs		
Table List		
Table Index		
Tables or diagrams (as separate section)		

Visual Cue	Used in Manual?	Example
Titles		
Subtitles		
Bold words		
Underlining		
Indented List		

REFERENCING FALL PROTECTION

Learner Worksheet

1. What are the subtitles which appear on this page?
2. What section number of the OH&S regulations is being shown here?
3. What information is contained in section 11.3 (3) (d)?
4. In what section would you expect to find information about an employer's responsibility for training?

GENERAL REQUIREMENTS

Obligation to use fall protection **11.2** (1) Unless elsewhere provided for in this Regulation, an employer must ensure that a fall protection system is used when work is being done at a place (a) from which a fall of 3 m (10 ft) or more may occur, or (b) where a fall from a lesser height involves an unusual risk of injury.

(2) The employer must ensure that guardrails meeting the requirements of Part 4 (General Conditions) or other similar means of fall restraint are used when practicable.

(3) If the use of guardrails or similar means of fall restraint is not practicable, the employer must ensure that another fall restraint system is used.

(4) If the use of a fall restraint system is not practicable, the employer must ensure that a fall arrest system is used.

(5) If the use of a fall arrest system is not practicable or will result in a hazard greater than if the system was not used, the employer must ensure that

- (a) a control zone is used in accordance with this Part,
- (b) a safety monitor system with a control zone is used in accordance with this Part, or
- (c) other procedures acceptable to the board are followed.

Fall protection plan **11.3** (1) The employer must have a written fall protection plan for a workplace if

- (a) work is being done at a location where workers are not protected by permanent guardrails, and from which a fall of 7.5 m (25 ft) or more may occur,
- (b) the employer uses a safety monitor and control zone or other work procedures as the means of fall protection, or
- (c) the board so directs, because a fall may involve an unusual risk of injury.

(2) The fall protection plan must be available at the workplace before work with a risk of falling begins.

(3) The plan must specify

- (a) the fall hazards expected in each work area,
- (b) the fall protection system or systems to be used in each area,
- (c) the procedures to assemble, maintain, inspect, use and disassemble the fall protection system or systems, and
- (d) the procedures for rescue of a worker who has fallen and is suspended by a personal fall protection system or safety net, but is unable to effect self rescue.

Instruction of workers **11.4** Before a worker is allowed into an area where a risk of falling exists, the employer must ensure the worker is instructed in the fall protection system for the area and the procedures to be followed.

RECOGNIZING VISUAL CUES

Learner Worksheet

Use *General Arrangement (page 280) and Electric Heating and Cooking Appliances (page 281) from the Canadian Electrical Code* and complete the assignment:

1. What head and subhead(s) appear on page 35?
2. How many rules appear for Electrical Heating and Cooking Appliances?
3. What new information has been added to this edition of the document?
4. How many pieces of information were deleted since the last edition?
5. What section of the Canadian Electrical Code contains information on Electrical Heating and Cooking Appliances?

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